EOS GROUND SYSTEM (EGS) INTEGRATION AND TEST PROGRAM PLAN

Revision 2
(Deliverable 1109)

May 30, 1997

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EXECUTIVE SUMMARY

This document presents the overall plan for the Earth Observing System (EOS) Ground System (EGS) Integration and Test (I&T) Program[1]. Since its inception, the EGS I&T Program approach and content has been modified on an ongoing basis as needed to consolidate and streamline testing efforts project wide. The transition from the original I&T program to the program defined here is discussed in Appendix B.

The EGS I&T Program consists of two main efforts: 1) the Confidence Test Program, and 2) the Flight Projects Joint Testing Program.

The Confidence Test Program focuses on demonstrations of key functionality, interface requirements, and EGS operability. The objective of the overall EGS I&T Program is to demonstrate and certify EGS Mission Readiness as a precursor to Operations Readiness Testing conducted by the Mission Operations Manager and Science Operations Manager. A continuously evolving set of confidence test packages is maintained at the EGS Component, EGS Interface, and EGS System levels. The EGS I&T team leads the development and execution of individual confidence test packages. Confidence test packages include test procedures, test data, and other supporting material, and are designed to exercise the system in its final form. The content of the test packages is specified in Section 5.3. At interim delivery points (component releases and EGS versions), those portions of the package that can be supported by the interim delivery are executed. The confidence test packages also provide a ready source of regression test materials following major changes, upgrades, or patches.

The EGS I&T Program is developed and executed by a set of Integrated Product Teams (IPTs) under the direction of the ESDIS I&T Manager. Each IPT is led by a civil servant supported by the I&T contractor, development organizations, and end-user organizations.

Joint testing efforts have been established with the TRMM, Landsat 7, AM-1 Flight Projects, the ASTER Instrument Team, and SAGE III. Joint tests support flight project and instrument team program requirements and provide valuable opportunities to exercise EGS capabilities in an operational environment.

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[1] This document supersedes and replaces the EOSDIS Integration, Test and Verification Plan (EITVP), the EGS Integration and Test Plan (EITP), and the ESDIS Test Philosophy Document.

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1. INTRODUCTION

1.1 Purpose and Scope

The purpose of this document is to provide the top level guidance for the EGS I&T Program. This document defines the objectives of the I&T Program, identifies the set of confidence tests supporting that program, specifies confidence test package content, establishes a mechanism for the execution of joint tests, and discusses the management and administration of the I&T Program. Exhibit 1-1 shows the sequence of EOSDIS testing from Developer Testing to Operations Testing.
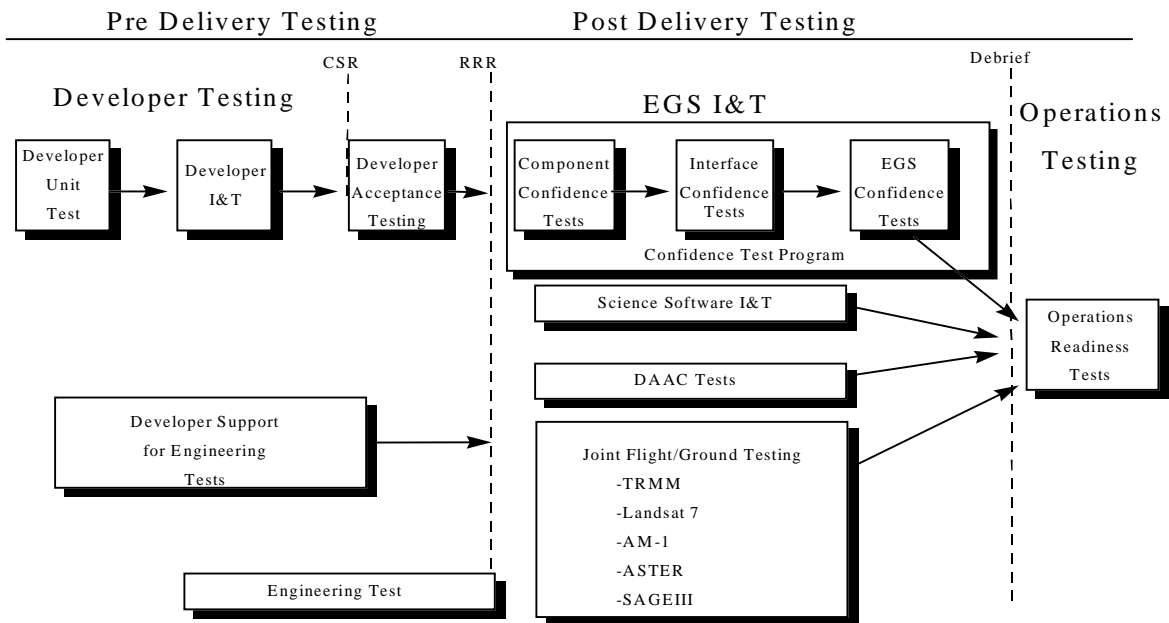
EXHIBIT 1-1: EOSDIS Test Flow

1.2 Content

The document is organized into seven sections and three appendices:

- Section 1 provides introductory material
- Section 2 defines the objectives and philosophy guiding the program

- Section 3 provides an initial overview of the Confidence Test Program, identifying the initial set of confidence tests and the test environment
- Section 4 identifies the currently active joint tests and establishes the mechanism for the identification and performance of future joint test efforts
- Section 5 discusses program management, including transition from the existing EGS I&T Program to the new program
- Section 6 provides an overview of EGS I&T test automation
- Section 7 discusses the EGS I&T Program metrics
- Appendix A provides a requirements verification matrix
- Appendix B summarizes EGS I&T Program changes
- Appendix C provides acronyms and abbreviations

2. Objectives and Philosophy

2.1 Background

In order to accommodate changes in the EOSDIS program, the EGS I&T Program is flexible. One aspect of flexibility is the evolution of the tests to accommodate maturing operational concepts, new capabilities, and new missions. A second aspect of flexibility is in the EGS I&T program organization. The original EGS I&T program has been redefined; this was driven by two major issues:

- Several different test organizations were performing overlapping activities and it was difficult to determine what distinct value was added at each of the different levels of the test program

- Concerns were expressed that the EGS I&T Program, based on tests driven by Level 3 requirements, may not have adequately addressed the important EGS issue: "Is the EGS ready to support Operations Readiness Testing - for Tropical Rainfall Measuring Mission (TRMM), Landsat 7, and AM-1 in the near term, and for the follow-on EOS missions in the future?"

To address these issues, a test streamlining effort was implemented, dividing test activities into "pre-delivery" and "post-delivery" phases:

- Pre-delivery testing, conducted by the development organizations, focuses on requirements verification

- Post-delivery testing, led by the EGS I&T contractor, focuses on the demonstration of key functions in the operational environment. Formal requirements verification and tracking is focused on a subset of mission critical, interface, and processing requirements.

This document was developed to guide post-delivery EGS testing.

2.2 Objectives

The overall objective of the EGS I&T Program is to integrate the various EOSDIS components into the EGS, validate the inter-component and external EGS interfaces, and provide, on a continuing basis, a credible demonstration that the EGS can reliably support end-to-end system functionality leading to operations. Specifically, to:

- Exercise component threads prior to integration into EGS

- Conduct interface tests at initial delivery and as regression tests

- Exercise the primary EGS system level functions

- Regression test components after new releases or substantive modifications

- Demonstrate system readiness for mission operations

2.3   EGS Integration and Test Program Philosophy

The EGS I&T Program includes two areas. One area is the Confidence Test Program, which includes the EGS I&T led development and execution of a series of pre-packaged confidence tests specifically targeted to meet EGS I&T test objectives at the component, interface, and EGS levels. The other area is the Joint Test Program, which includes joint tests identifed to meet test objectives of EGS I&T, Flight Projects, Instrument teams, and other test organizations.

The Confidence Test Program evolves naturally with MTPE, EOS, and EOSDIS. As operational concepts mature, new capabilities are added, and as new missions are deployed, new confidence test packages are developed and existing ones are modified to support regression testing.

Requirements verification is conducted during pre-delivery testing, and is performed by the developer organizations. The EGS I&T Confidence Test Program also maintains traces of its Confidence Tests to mission critical requirements. EGS I&T requirement traces were created directly from the requirement baseline repositories from the development contractor organizations. These organizations maintain and categorize the requirements by criticality in their respective requirements baseline tools (e.g. Requirements and Traceability Management (RTM) tool.) The baselines include the EOSDIS Core System (ECS) Functional and Performance Requirements (F&PR), EOS Data and Operations System (EDOS) requirements combined from various Interface Requirements Documents (IRDs), and the EOSDIS Backbone Network (EBnet) F&PR Level 2 requirements.

The main drivers for the confidence test packages are operational scenarios and related key functions, interface requirements, and performance requirements. Key functions that are essential to mission capabilities are identified from EGS design specification "function" descriptions and interface control documents (ICDs). Key functions are identified by user and developer members of Integrated Product Teams (IPTs). The Operational scenarios are identified from input received by the Distributed Active Archive Center (DAAC)/Science users, Flight Projects, and the development organizations.

The Confidence Test packages are coordinated through a single high level plan. The packages are modified to incorporate new information, functionality, and lessons learned. Confidence test execution will be performed by IPT members.

This overall approach to the Confidence Test Program differs from the original I&T approach. The differences between the two approaches are summarized in Exhibit 2-1.

Original I&T	Current I&T Approach

Approach	
Test planning driven by a large subset of Level 3 Requirements	Test planning driven by demonstrations of critical functionality and operational scenarios. Mapping to mission critical requirements.
I&T plan and procedures published for EGS Version.	One program plan. Confidence Test Packages continuously evolve to match fully delivered system capabilities. Portions supported by current system are executed.
No explicit regression testing mechanism.	Confidence test packages modularized and designed to naturally support regression testing.
Entire program carried out by a single team.	Program responsibility distributed to the Integrated Product Teams.

EXHIBIT 2-1: Comparison of Previous and Current I&T Approaches

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3. Confidence Test Program Overview

Confidence test packages are developed for three different levels of testing:

- EGS Component Level
- EGS Interface Level
- EGS System Level

The logical relationship between the test packages, and the sequence of execution are illustrated in EXHIBIT 3-1: EGS I&T Confidence Test precedence Diagram. This is basically a block diagram, read left to right, that illustrates the sequence of the EGS I&T confidence tests.

The program is hierarchical in the sense that: a) individual <u>EGS component</u> requirement verification/capability tests and/or dry-runs are executed before <u>EGS interface</u> tests between the component systems, b) these may be followed by sets of related scenario driven <u>interface</u> and <u>functional qualification component</u> tests, and c) the test program is completed with comprehensive <u>EGS system</u> level tests. The buildup of the confidence tests to the point of TRMM, L-7, AM-1, and SAGE operations readiness support within the context of the entire EGS Confidence Test Program is shown in Exhibit 3-1.

3.1 EGS Component Level

For the purposes of organizing the Confidence Test Program, the ECS Component is divided into an EOS Operations Center (EOC) component and a Science Data Processing (SDP) component. As a result of test streamlining, the SDP component level tests have been revised to focus on operational capabilities as opposed to L3 MC requirement test cases. Therefore, they have been renamed SDP Functional Qualification (SFQ) tests, to distinguish them from earlier versions of the SDP component requirement verification tests. The requirements for component level confidence testing of the EDOS and EBnet components are met by acceptance testing activities administered by Goddard Space Flight Center (GSFC) codes 510 and 540, respectively.

3.1.1 EOC Component Confidence Tests

EOC component confidence tests are administered by the Flight Systems and Operations Integrated Product Team (FSO-IPT). These tests exercise the key functions for real-time spacecraft and instrument command and control, mission planning and scheduling, telemetry and spacecraft analysis, and EOC Resource Management. These tests provide a foundation for EOC participation in EGS level confidence tests.
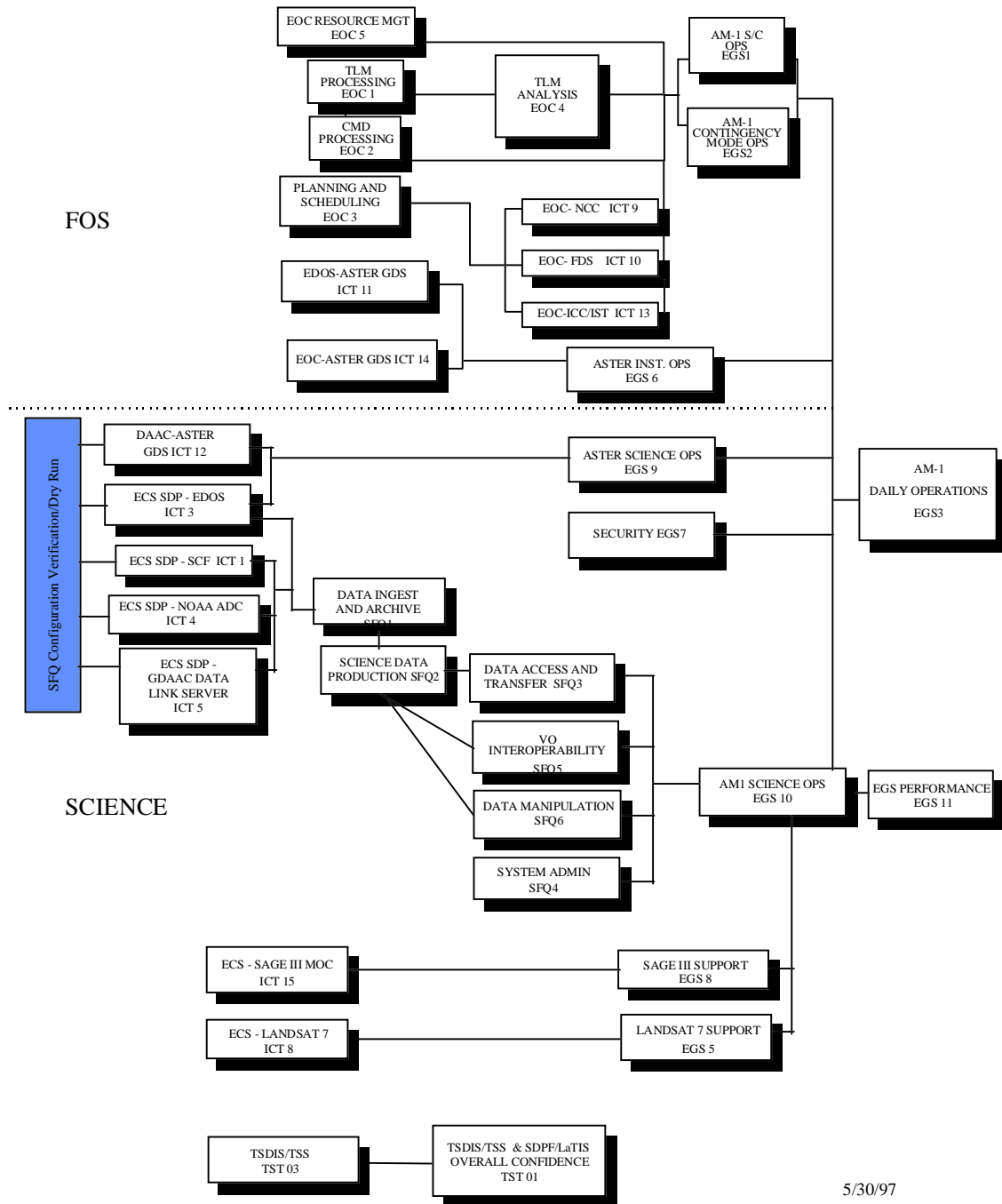
EGS I&T Test Precedence Diagram

EXHIBIT 3-1: EGS I&T Confidence Test Precedence Diagram

3.1.2 SDP Functional Qualification Component Confidence Tests

The SFQ component confidence tests are administered by the Science Systems and Operations Integrated Product Team (SSO-IPT). These tests exercise the data ingest into the ECS system, data processing, data storage, data pulled by the science users and the EGS security functions.

3.1.3 EDOS Component Confidence Tests

The test program for the EDOS is planned and administered within GSFC code 510. The ESDIS I&T organization (GSFC code 505) maintains a representative on the EDOS IPT to gain insight into the EDOS test program, to help select tests from the EDOS test program that meet the needs and objectives of the EGS confidence test program, and to coordinate EDOS support to EGS interface and EGS system level confidence tests. No explicit EGS I&T developed EDOS component level confidence tests are planned.

3.1.4 EBnet Component Confidence Tests

The test program for the EBnet is planned and administered within GSFC code 540. The EBnet Project maintains representatives on the EGS IPTs to provide insight into the EBnet test program, to support the development of the EGS confidence test program, and to coordinate EBnet support to EGS interface and EGS system level confidence tests. No explicit EGS I&T developed EBnet component level confidence tests are planned.

3.2 EGS Interface Level

In general, interface confidence tests exercise bulk data (mission data) flow at nominal and maximum rates as well as and the ability to transfer and respond to all message data types. Error and exception handling is exercised for custom protocols (Data Availability Notice (DAN)/Data Availability Acknowledgment (DAA) protocols, for example), but not for Commercial Off-The-Shelf (COTS)/standard protocols supporting the interface (such as, Transmission Control Protocol/Internet Protocol (TCP/IP), X.25). In general, interface confidence tests are driven by the corresponding Interface Control Documents (ICDs). Unique interface features and the mechanisms for testing them are identified in the corresponding confidence test packages.

3.3 EGS System Level

These mission oriented tests exercise end-to-end functionality in preparation for Operations Readiness Testing. The EGS System level tests generally rely on and are composed of a set of prior component and interface level tests. The key difference is that the focus is on the system operation and performance as a whole, with the various

components and interfaces executing simultaneously to represent a complete operational scenario. The EGS System level tests are also hierarchical, in the sense that the final EGS test in a series may incorporate all or parts of predecessor EGS tests, as well as component and interfaces tests.

3.4   EGS I&T Confidence Test Package Description

The test packages are described in EXHIBIT 3-2. This EGS I&T Confidence Test Package Summary chart lists the full test package id and brief description for each test on the EGS I&T Confidence Test Precedence Diagram.

EGS Component		
EOC Component Confidence Tests		
EOC 1	Telemetry Processing and Logging Confidence Test	Tests the capabilities of the Telemetry Processing Service - ingest, decommutation, engineering unit convert, and limit check housekeeping, health and safety, and standby telemetry from the EOS spacecraft bus and on-board instruments. Verifies the EOC can archive telemetry data.
EOC 2	Command Processing Confidence Test	Verifies the ability to perform real-time and stored command transmissions at all rates and formats to the prime and back-up CTIUs, proper implementation of CCSDS commanding protocols, and inhibition of critical and hazardous commanding.
EOC 3	Planning and Scheduling Confidence Test	Verifies the EOC can produce an integrated schedule of activities for instruments and spacecraft subsystems, and generate the ground scripts and command loads necessary to implement the scheduled activities
EOC 4	Telemetry Analysis Confidence Test	Tests the FOS Analysis Service – R/T and off-line analysis of S/C bus and instrument data to track performance and trends, and detect/isolate anomalies. Verifies the ability to select, plot, and statistically analyze selected parameters. Verifies the EOC can create and archive analysis (including statistical) data sets.

EOC 5	Resource Management Confidence Test	Demonstrates the ability of the FOT to shift displays between various rooms and pages, assign key functions, protect privileged operations, configure and de-configure logical processing strings, and to failover to redundant or standby elements.
SDP Functional Qualification Tests		
SFQ 1	Data Ingest and Archive Confidence Test	Tests data ingest and archive functions of the ECS
SFQ 2	Science Data Production Confidence Test	Verifies the science operations team can plan, schedule, and execute data production runs. Verifies priority processing, the QA functionality, emergency procedures, and production performance.
SFQ 3	Data Access and Transfer Confidence Test	Demonstrates the overall capability of ECS to provide users with specific data as requested from various spacecraft and instruments.
SFQ 4	System Administration Confidence Test	Verifies administration type functionality, and system monitoring functionality.
SFQ 5	V0 Interoperability Confidence Test	Verifies the users of the ECS SDPS and EOSDIS V0 systems can exchange directory, inventory, and guide information.
SFQ 6	Data Manipulation Confidence Test	Ensures format conversion of EOS data, subsetting, compression, data transformation, and subsampling.

EGS Interface Confidence Tests		
ICT 1	ECS SDP - SCF Interface Confidence Test	Verifies the ability of the SCF and DAAC elements to transfer and respond to all message data types.
ICT 2	open	
ICT 3	ECS SDP - EDOS Interface Confidence Test	Ensures the data transfer between EDOS and the DAAC, electronically and on tape.
ICT 4	ECS SDP - NOAA ADC Interface Confidence Test	Verifies the ECS user has access to NESDIS/SAA, capability to search and identify data located at NOAA Data Centers, and capability to ingest NOAA ancillary data for the EOS standard product generation.

ICT 5	ECS SDP - GDAAC Data Link Server Interface Confidence Test	Ensures the NCEP FNL, MRF, and ETA data sets transfers from the DAO/DAS Data Link Server to ECS GSFC DAAC, and then to ECS LaRC DAAC.
ICT 8	ECS – Landsat 7 Interface Confidence Test	Verify the ECS interface with the LPS, IAS, MMO/MOC, GCMD, and the EDC guide server.
ICT 9	EOC - NCC Interface Confidence Test	Verifies the schedule message interface and the real-time message interface between the EOC and NCC.
ICT 10	EOC - FDS Interface Confidence Test	Verifies the ECS can receive required orbit, attitude and mission planning aid data for the AM-1 mission from the FDS and provide orbit and attitude telemetry subsets to FDS for refinement and anomaly investigation.
ICT 11	EDOS - ASTER GDS Interface Confidence Test	Ensures EDOS receives ASTER instrument data from the spacecraft via SN, demultiplexes the information, and delivers information from the EDOS to the GSFC DAAC, ASTER AOS, and ASTER SDPS. Ensures the ability for EDOS to receive information from the ASTER SDPS.
ICT 12	DAAC - ASTER GDS Interface Confidence Test	Verifies the interfaces, data transfer protocols, and interoperability between ECS and the ASTER GDS.
ICT 13	EOC - ICC/IST Interface Confidence Test	Verifies the IST tools perform their assigned functions properly, can support instrument operations test scenarios. Tests potential conflicts between various IST users.
ICT 14	EOC -ASTER GDS Interface Confidence Test	Exercises bulk data flow at nominal and maximum rates and the ability to transfer and respond to all message data types.
ICT 15	ECS - SAGE III MOC Interface Confidence Test	Verifies interfaces, data transfer protocols, and interoperability between ECS and the SAGE III MOC.
EGS System Confidence Tests		
EGS 1	AM-1 Spacecraft Operations Confidence Test	Demonstrates the ability to operate the AM-1 spacecraft through the Space Network.
EGS 2	AM-1 Contingency Mode Operations Confidence Test	Ensures that the EOC can conduct commanding and telemetry processing operations with the Deep Space Network, Ground Network and Wallops Orbital Tracking System sites at each rate and format supported by that site.

EGS 3	AM-1 Daily Operations Confidence Test	Verifies the function of normal daily operations of the EGS in support of the AM-1 Mission.
EGS 5	ECS - Landsat 7 Interoperability Confidence Test	Test the ECS interfaces with the LPS, the IAS, and the MMO/MOC.
EGS 6	ASTER Instrument Operations Confidence Test	Ensures ASTER GDS can operate ASTER through EOC.
EGS 7	Security Confidence Test	Verifies the security functions of the EGS.
EGS 8	SAGE III Interoperability Confidence Test	Tests the performance of normal daily operations of the EGS in support of the Meteor 3M Mission (SAGE III).
EGS 9	ASTER Science Operations Confidence Test	Exercise all ASTER science data operations, interfaces and user data access in an operational, scenario driven environment.
EGS 10	AM-1 Science Operations Confidence Test	Verifies EGS end-to-end science operations in support of AM-1 Mission
EGS 11	EGS Performance Confidence Test	Verifies the end-to-end performance of the daily operations of EGS in support of AM-1 Mission
EGS TRMM Confidence Tests		
TST01	TSDIS/TSS and SDPF/LaTIS Overall Confidence Test	Provides an overall operational confidence test between TSDIS and TSS and between TSS and LaTIS.
TST03	TSDIS/TSS Interface, Ingest and Archive Test	Tests data ingest and archive and interfaces between TSDIS and TSS and V0.

EXHIBIT 3-2: EGS I&T Confidence Test Package Summary

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4. Joint Test Program

One of the primary reasons for the new approach to the I&T program is to eliminate duplication in the I&T effort by combining, where possible, test efforts initiated and managed by different organizations with overlapping objectives. Joint tests are coordinated with the TRMM, Landsat 7, AM-1, and SAGE III Flight Projects, as well as the ASTER Instrument Project, and will also be established for future EOS/MTPE missions supported by EOSDIS.

Other organizations may have test efforts underway that also meet the objectives of the EGS I&T Program. These organizations include the Science Software Integration and Test (SSI&T) team and the V0 Data Migration Verification Project performed by Hughes Information Technology Systems (HITS) under the direction of the Science Operations Manager.

Joint tests with the EOS/MTPE Flight and Instrument Projects provide a valuable opportunity for maximizing EGS integration efficiency, while supporting the project's pre-launch system verification requirements.

4.1 AM-1 Joint Tests

The Joint Test Program with, and managed by, the AM-1 Project currently includes three EOC Compatibility Tests (ECTs) and a full system end-to-end test (ETE) with the AM-1 spacecraft.

EOC Compatibility Test 1 (ECT1)

The first EOC Compatibility Test (ECT1) is a simple demonstration of the ability of the EOC to generate commands and process telemetry for the AM-1 spacecraft. This test is planned to be run between the EOC at GSFC and the SCS at Valley Forge, Pennsylvania. A dedicated circuit between the two facilities will be used.

EOC Compatibility Test 2 (ECT2)

ECT2 is a comprehensive EOS command and telemetry demonstration. Participants include the EOC at GSFC, EDOS V3, SN, and the SCS at Valley Forge, Pennsylvania. This will be an RF test run via TDRSS. Command data will flow from the EOC to EDOS to TDRSS and then to a satellite antenna at the Valley Forge Facility, with telemetry data following the reverse path.

EOC Compatibility Test 3 (ECT3)

ECT3 extends ECT2 to spacecraft command and control through the contingency sites as well as through the SN. Science data will also be delivered to the DAACs via EDOS for production, archiving, and access by the users. Instrument command and control via the EOC is exercised with the ASTER GDS and the other instrument ISTs. The EOC- FDF interface is also exercised in ECT3.

AM-1 End-to-End Test (ETE)

The ETE Test extends ECT3 to test full system compatibility, including the planning and scheduling process, and ingest of ancillary data from NOAA.

4.2   TRMM Joint Tests

TRMM integration efforts being supported jointly by the TRMM Project and the ESDIS Project are shown in Exhibit 4-1.

Confidence Test Suite	Test Description	Participants
TST 01 TSDIS/TSS and SDPF/LaTIS Overall Confidence Test	The overall objective of this end-to-end test is to verify that the TSS and the LaTIS operates properly and can provide the full range of functional capabilities required to support the TRMM Mission Operations	EGS I&T, GSFC DAAC TSS M&O, LaRC DAAC LaTIS M&O, TSDIS I&T, SDPF I&T, TSDIS Science Users (TSU), TRMM Science Users
TST 03 TSDIS/TSS Interface, Ingest and Archive Test	The objectives of this test for the TRMM Support System (TSS), contained within the GSFC DAAC, are to verify the interfaces with the TSDIS Ground System for distributing TRMM science data products for reprocessing and to distribute ancillary data to TSDIS for processing and reprocessing. This test also verifies the distribution of TRMM products to TSDIS Science Users (TSUs) for data trending and analysis..	EGS I&T, TSS M&O Support, TSDIS I&T, Participating TSU Site.

EXHIBIT 4-1: Joint TRMM / ESDIS Integration Tests

4.3   Landsat 7 Joint Tests

Landsat 7 Integration efforts being supported jointly by the Landsat 7 Project and the ESDIS Project are shown in Exhibit 4-2.

Confidence Test Suite	Test Description	Participant
ICT8: Landsat 7 Ground System-ECS Interface Some of the objectives of these tests are same as those of Landsat 7 I&T 4, 6, & 9	Verify ECS Release B interface with Landsat 7 Ground System (LPS), which includes FDDI, Router connections and Landsat 7 Data transmission to and from ECS at EDF.	Lead: EGS I&T Support: LPS, EBnet, ECS at EDF, MMO, MOC, IAS, IGSs
EGS5: Landsat 7 Interoperability Confidence Test. Some of the objectives of these tests are same as those of Landsat 7 I&T 4, 6, and 9	• Verify ability of the Landsat 7 Ground System to interface with the ECS to transfer messages, such as DAN, DAA and DDA, and reports. • Verify ability of the Landsat 7 Ground System to interface with the ECS to transfer L0R data using L0R test data • Verify ability of the Landsat 7 Ground System to interface with the ECS to transfer L0R inventory metadata using test data • Verify ability of the Landsat 7 Ground System to interface with the ECS to transfer L0R browse data using test data	Lead: EGS I&T Support: LPS, EBnet, ECS at EDF, MMO, MOC, IAS, and IGSs

EXHIBIT 4-2: Joint Landsat 7 / ESDIS Integration Tests

4.4 SAGE III Joint Tests

SAGE III Integration efforts being supported jointly by the SAGE III Project and the ESDIS Project are shown in Exhibit 4-3[1]

Confidence Test Suite	Test Description	Participant
ICT15: ECS - SAGE III MOC Interface	Verify LaRC DAAC ECS interface with SAGE III MOC. Includes authorization and authentication protocol, as well as data exchange and error handling between the SAGE III MOC and LaRC DAAC ECS.	Lead: EGS I&T Support: SAGE III MOC, LaRC ECS DAAC M&O
EGS8: SAGE III Interoperability	Perform all normal mission end-to-end operations. Includes: data availability notification, data exchange, ingest and archive of Level 0 data/metadata and definitive orbit data/metadata.	Lead: EGS I&T Support: SAGE III MOC, LaRC ECS DAAC M&O, SAGE III SCF

EXHIBIT 4-3: Joint SAGE III / ESDIS Integration Tests

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[1] n.b. SAGE tests are currently being redefined because of SAGE processing redefinition; revised versions TBD next test plan revision

4.5 ASTER Joint Tests

The ASTER instrument and Ground Data System (GDS) are a complex system requiring extra attention in order to be successfully integrated with the EGS. This effort is additionally complicated by the need to work with a geographically distant International Partner (IP). A Joint Test Program has been established between the ASTER Project and EGS I&T to support this effort. ASTER's data and control is handled differently than the other four instruments and unique joint tests with the ASTER GDS are required to ensure adequate testing of the ASTER system interface to the EGS. An additional factor affecting joint testing is the parallel development of the ASTER GDS and the EGS I&T Program. For current planning purposes, the following details are assumed.

System Integration between the ASTER GDS and EGS is conducted in a series of phased, incremental tests on delivered EGS and GDS components. These tests are intended to exercise system components, and to confirm that relevant interfaces and end-to-end system performance meet mission requirements. Exhibits 4-3, 4-4, and 4-5 show potential joint tests, their objectives, and the respective ASTER and EGS test titles for interface, EGS system level, and operations tests, respectively. Engineering Tests (interface compatibility & functionality), EGS I&T tests (confidence tests), Science Software Integration and Test (integrate Level 1) and Operations Readiness Tests (including simulations and end-to-end tests) are all planned.

Confidence Test Suite	Test Description	Participants
ICT1: DAAC-SCF Interface	Verify the ability of the ASTER SCF and EDC DAAC to transfer and respond to all message data types. Proper implementation of bulk data transfers.	Lead: EGS I&T Support: SCF Ops
ICT3: DAAC-EDOS Interface	Verify EDOS can successfully pass ASTER PDSs to the GSFC DAAC	Lead: EGS I&T Support: optional
ICT11: EDOS-ASTER GDS Interface	Verify EDOS - GSFC DAAC interface for ASTER EDS. Verify EDOS - ASTER ICC interface for real time & rate buffered instrument telemetry. Verify EDOS - ASTER SDPS interface for ASTER PDS.	Lead: EGS I&T Support: ASTER ICC, ASTER SDPS, ADN, and ASTER IST
ICT12: DAAC-ASTER GDS Interface	Verify interfaces between ECS and the ASTER GDS. Verify data transfer protocols between ECS and the ASTER GDS. Verify interoperability between ECS and the ASTER GDS. Verifies set up and configuration of the	Lead: EGS I&T Support: Full GDS Support

Confidence Test Suite	Test Description	Participants
	ground system data bases and interfaces during pre-mission phases.	
ICT13: EOC-ICC/IST Interface	Verify the ability to support instrument scheduling, commanding and telemetry monitoring from the ICC/ISTs.	Lead: EGS I&T Support: ASTER IST, ASTER ICC, and ADN
ICT14: EOC - ASTER GDS Interface	Ensure verification of users attempting to gain access to either EOSDIS or to ASTER GDS via the ASTER GDS to EOSDIS interface. Verify the ability of the EOC to send updates to the EOC operations database to ASTER GDS.	Lead: EGS I&T Support: ASTER SPDS, ASTER ICC, ASTER IST and ADN
EGS7: Security Confidence Test	Verify the user authentication of both ASTER GDS users for the EOSDIS privileges and EOSDIS users for ASTER GDS privileges.	Lead: EGS I&T Support: Full GDS Support

EXHIBIT 4-4: Joint ASTER EGS Interface Tests

Confidence Test Suite	Test Description	Participants
AM-1 ECT 2 Mission Integration	Spacecraft SN test with all command & telemetry Memory loads SSR dumps	Lead: EGS I&T Participants: ASTER GDS AOS/ICC support is optional
EGS3: AM-1/Landsat 7 EGS Version 1 Baseline Test	Limited test of EGS components available for early interface testing in support of AM-1	Lead: EGS I&T Participants: Full GDS support
AM-1 ECT 3 Mission Integration	Spacecraft SN test with CMD, TLM, loads/dumps, and science data	Lead: EGS I&T Participants: ASTER GDS AOS/ICC support is required
EGS3 & EGS5 AM-1/Landsat 7 EGS Version 2 Baseline Test	Perform a "day in the life" of AM-1 and L-7, including nominal ASTER support such as scheduling, commanding, telemetry processing and product generation	Lead: EGS I&T Participants: Full GDS support

EXHIBIT 4-5: ASTER EGS Joint Systems Tests

Confidence Test Suite	Test Description	Participants
EGS6: ASTER Instrument Operations	Perform all normal mission scheduling,	

5. Integration and Test Program Management

5.1 I&T Charter and Organization

Charter

The ESDIS I&T Team is responsible for integrating the various components of the EGS into a functioning end-to-end ground system that is ready to be transitioned to the Flight Operations and Science Operations teams, to support Operations Readiness Test activities. EGS I&T activities are conducted on a continuing basis as the EOSDIS evolves to assimilate new technology and to support new missions. To accomplish this, the EGS I&T team executes the EGS Confidence Test Program and supports the Joint Test Programs.

Organization

The EGS I&T Program is led by the ESDIS I&T Manager. The ESDIS I&T Manager chairs the Test Integration & Certification Test Oversight Committee (TICTOC), which oversees all EGS I&T activities. Supporting the TICTOC are Network and Institutional elements, and four EGS I&T Integrated Product Teams (IPTs). The EGS I&T IPTs are led by a NASA civil servant and include members from the EGS I&T contractor, the developers, and end user (M&O, Science, and Instrument Team) organizations. This organizational structure is illustrated in Exhibit 5-1.
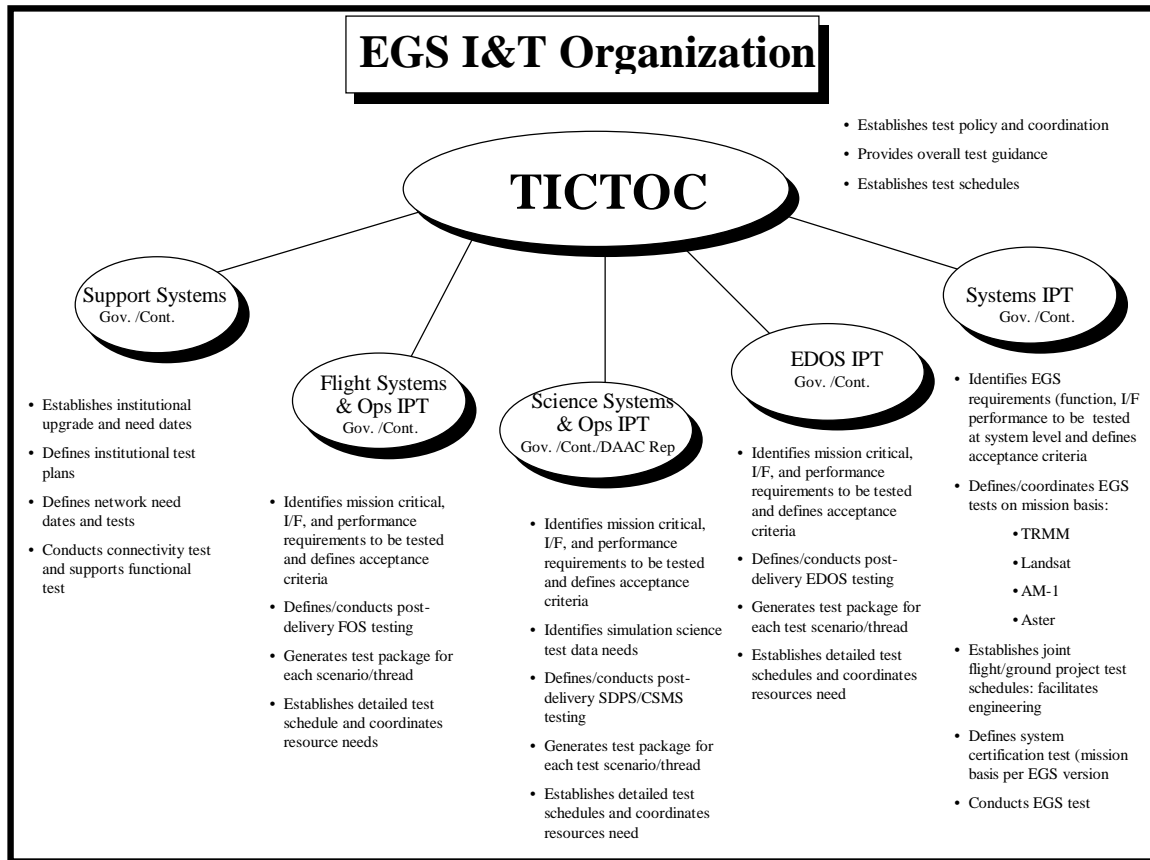
EGS I&T Organization

TICTOC

- Establishes test policy and coordination
- Provides overall test guidance
- Establishes test schedules

Support Systems
Gov. /Cont.

- Establishes institutional upgrade and need dates
- Defines institutional test plans
- Defines network need dates and tests
- Conducts connectivity test and supports functional test

Flight Systems & Ops IPT
Gov. /Cont.

- Identifies mission critical, I/F, and performance requirements to be tested and defines acceptance criteria
- Defines/conducts post-delivery FOS testing
- Generates test package for each scenario/thread
- Establishes detailed test schedule and coordinates resource needs

Science Systems & Ops IPT
Gov. /Cont./DAAC Rep

- Identifies mission critical, I/F, and performance requirements to be tested and defines acceptance criteria
- Identifies simulation science test data needs
- Defines/conducts post-delivery SDPS/CSMS testing
- Generates test package for each test scenario/thread
- Establishes detailed test schedules and coordinates resources need

EDOS IPT
Gov. /Cont.

- Identifies mission critical, I/F, and performance requirements to be tested and defines acceptance criteria
- Defines/conducts post-delivery EDOS testing
- Generates test package for each test scenario/thread
- Establishes detailed test schedules and coordinates resources need

Systems IPT
Gov. /Cont.

- Identifies EGS requirements (function, I/F performance to be tested at system level and defines acceptance criteria
- Defines/coordinates EGS tests on mission basis:
  - TRMM
  - Landsat
  - AM-1
  - Aster
- Establishes joint flight/ground project test schedules: facilitates engineering
- Defines system certification test (mission basis per EGS version
- Conducts EGS test

EXHIBIT 5-1: EGS I&T Organizational Structure

5.2   Roles and Responsibilities

5.2.1   Organizations Represented at the TICTOC

The I&T effort is supported by several organizations coordinated by the ESDIS Project I&T Manager, ESDIS I&T staff, and contractor support from Intermetrics and CSC. At the highest level, the mechanism for coordinating I&T activities is the TICTOC. The TICTOC meets bi-weekly. The roles and responsibilities of the organizations and individuals supporting the I&T effort are discussed below.

ESDIS Project I&T staff - The ESDIS I&T Manager, supported by the ECS Integration and Acceptance Test Manager and the TRMM Mission Coordinator, provides the overall direction for the I&T effort. The ESDIS I&T Manager presents I&T issues and resolves

resource allocation and scheduling conflicts at the Project level (i.e., civil servant to civil servant).

Intermetrics - Intermetrics is the lead contractor in the EGS I&T Program. The EGS I&T contractor is responsible (via the IPT teams) for developing test packages and detailed schedules, coordinating test execution, and reporting test results. The contractor maintains a requirements verification matrix database, and develops, tracks, and reports EGS I&T Program metrics. The contractor also maintains a central library of EGS I&T Program produced documentation on the World Wide Web (WWW) EGS I&T Homepage. The contractor oversees the development/acquisition, integration, and configuration control of tools and databases utilized for EGS I&T support, as well as associated training. The I&T contractor provides EGS I&T coordination at the contractor-to-contractor level, and with civil service personnel as directed by the ESDIS I&T Manager.

Computer Sciences Corporation (CSC) - CSC, under the CNMOS contract, provides support services to the TICTOC and other tasks such as DR Tracking, level 3 I&T schedule maintenance, and DMR development support, as directed by the ESDIS I&T Manager.

ECS Project (GSFC 505/HITS) - The ECS project keeps EGS I&T informed of ECS development progress, problems, issues and schedules, and provide review and comment on integration test plans, procedures and reports. ECS developers provide personnel support, as negotiated, for EGS I&T testing and engineering tests with other EOSDIS elements.

EDOS Project (GSFC 510/TRW) - The EDOS project keeps EGS I&T informed of EDOS development progress, problems, issues and schedules, and provide review and comment on integration test plans, procedures and reports. EDOS developers provide personnel support, as negotiated, for EGS I&T testing and engineering tests with other EOSDIS elements. EDOS also performs component tests which satisfy EGS I&T EDOS related confidence test requirements.

EBnet Project (GSFC 540) - The EBnet project keeps EGS I&T informed of EBnet project progress, problems, issues and schedules, and reviews and comments on integration test plans, procedures and reports. The EBnet project provides engineering support, as negotiated, for EGS I&T testing and engineering tests with other EOSDIS elements. EBnet also performs connectivity tests between various EGS elements supported by EBnet.

EOSDIS Test System (ETS) Project (GSFC 515/CNMOS) - ETS keeps the team informed of ETS development progress, problems, issues and schedules. ETS provides technical support, as required, to resolve ETS problems occurring during testing.

DAACs - The DAACs, through the DAAC Managers and DAAC Systems Engineers, support the I&T effort by providing technical support, including review and comment to the development of test plans and procedures. The DAAC M&O staffs provide operator support, as negotiated, for EGS confidence testing. The DAACs are represented locally on the TICTOC by the EOSDIS Science Operations Manager and their staff. Working

level technical contacts are maintained directly between the DAAC Systems Engineers and the EGS I&T contractor through the IPTs.

ECS M&O (GSFC 510 / Lockheed Martin / HITS) - The ECS M&O organization, including the AM-1 flight operations team, provide technical review, input, and comment to EGS I&T test plans, procedures, and reports. M&O provides ECS operations support for EGS confidence testing.

EDOS M&O (GSFC 510 / ATSC) - The EDOS M&O organization provides technical review, input, and comment to I&T test plans, procedures and reports. EDOS M&O provides EDOS operations support during I&T testing.

TRMM Project - The TRMM project keeps EGS I&T informed of TRMM flight and ground system development progress, problems, issues and schedules, and provides review and comment on TRMM related integration test plans, procedures and reports. The TRMM project and EGS I&T contractor work together to develop joint tests whenever possible to non-redundantly satisfy both TRMM and EOSDIS requirements.

AM-1 Project - The AM-1 project keeps EGS I&T informed of AM-1 flight and ground system development progress, problems, issues and schedules, and provides review and comment on AM-1 related integration test plans, procedures and reports. The AM-1 project and EGS I&T contractor work together to develop joint tests whenever possible to non-redundantly satisfy both AM-1 and EOSDIS requirements.

Landsat 7 Project - The Landsat 7 project keeps EGS I&T informed of Landsat 7 flight and ground system development progress, problems, issues and schedules, and provides review and comment on Landsat 7 related integration test plans, procedures and reports. The Landsat 7 project and EGS I&T contractor work together to develop joint tests whenever possible to non-redundantly satisfy both Landsat 7 and EOSDIS requirements.

SAGE III Project - The SAGE III project keeps EGS I&T informed of SAGE III ground system development progress, problems, issues and schedules, and provides review and comment on SAGE III related integration test plans, procedures and reports. The SAGE III project and EGS I&T contractor work together to develop joint tests whenever possible to non-redundantly satisfy both SAGE III and EOSDIS requirements.

Networks Test Manager - The Network Test Manager keeps EGS I&T informed of the status of the NASA institutional support elements and assist in the coordination of Nascom, Space Network, FDF, DSN, GN, WOTS, RFSOC and SDPF support for I&T tests. Network Test Manager support includes generating and releasing briefing messages, scheduling required network resources, and conducting network pre-test activities to insure that the networks are ready to support EGS I&T activities.

Science Software I&T Manager - The ESDIS SSI&T team represents SSI&T interests at the TICTOC and keeps EGS I&T informed of SSI&T progress, problems, issues, schedules and lessons learned. For EGS I&T planning purposes, it is assumed that ECS Level 3 requirements for SSI&T are verified by the SSI&T team. However, the shared EGS I&T and SSI&T test planning goal is to coordinate in order to optimize the overall test schedule and resources.

Integrated Product Teams - Described below.

5.2.2   Systems Integrated Product Team (SYS-IPT)

The Systems Integrated Product Team (SYS-IPT) coordinates the activities of the other IPTs by focusing on issues crossing IPT boundaries, including mission and total systems testing, and integrated schedules.

Mission coordinators are members of the SYS-IPT and are currently assigned for the TRMM, Landsat 7, AM-1, and SAGE III missions. Mission coordinators are the ESDIS liaison to the EOS/MTPE flight projects and are responsible for the development of EGS detailed mission requirements to support these missions and the coordination of EGS support for joint ESDIS/flight project testing. The mission coordinators may also be designated as test leads for EGS level testing or multi-mission testing that crosses EGS I&T IPT boundaries. The mission coordinators draw on the resources of the I&T IPTs as necessary to support joint testing and EGS system level testing. To support joint tests, the mission coordinators will develop joint test packages tailored to the ESDIS support requirements for that test. The following EGS level tests from the current confidence test suite are assigned to the respective mission coordinators as indicated below:

Mission Coordinator	EGS I&T Confidence Test
AM-1	EGS3
Landsat 7	EGS5
SAGE III	EGS8

The following Joint Tests are the responsibility of the SYS-IPT TRMM Mission Coordinator:

Joint Tests	Join Test Id
TSDIS/TSS and SDPF/LaTIS Overall Confidence Test	TST 01
TSDIS/TSS Interface, Ingest and Archive Test	TST 03

The following Joint Tests are the responsibility of the SYS-IPT AM-1 Mission Coordinators:

Joint Tests	Join Test Id
AM-1 EOC Compatibility Test 1	ECT1
AM-1 EOC Compatibility Test 2	ECT2
AM-1 EOC Compatibility Test 3	ECT3
AM-1 ETE #1 Test	ETE #1
AM-1 ETE #2 Test	ETE #2
AM-1 ETE #3 Test	ETE #3

In addition to Mission Coordinators, members of the SYS-IPT include senior test engineers who are responsible for a key functional capability that crosses mission boundaries. These include Security and EGS end-to-end system performance. The following EGS level tests are assigned to a respective key function test specialist as indicated below:

Key Functional Capability	EGS I&T Confidence Test
Security	EGS 7
ETE Performance	EGS 11

Membership

> Team Lead - Code 505
> EGS I&T Contractor
> DAAC M&O
> > GSFC
> > LaRC
> > EDC
> Mission Coordinators
> ECS Project
> EDOS Project
> EBnet Project

5.2.3 Flight Systems and Operations Integrated Product Team (FSO-IPT)

The Flight Systems and Operations IPT (FSO-IPT) is responsible for the integration of flight operations elements with the EGS. EGS functions, under the cognizance of the FSO-IPT, include telemetry command and control, mission planning and scheduling, spacecraft analysis, and integration of Instrument Support Terminals and Instrument

Control Centers with the EGS. The FSO-IPT is responsible for the development, maintenance, execution, and results reporting for confidence test packages of the EOC component, EOC interfaces, and spacecraft operations confidence tests at the EGS level. Under the direction of the SYS-IPT, the FSO-IPT supports joint tests with the flight projects involving the EOC, such as the AM-1 EOC Compatibility Test (ECT) series, and EGS level confidence tests. The following tests from the current confidence test suite are assigned to the FSO-IPT:

Telemetry Processing Confidence Test	(EOC1)
Command Processing Confidence Test	(EOC2)
Planning and Scheduling Confidence Test	(EOC3)
Telemetry Logging and Analysis Confidence Test	(EOC4)
EOC Resource Management Confidence Test	(EOC5)
EOC - NCC Interface Confidence Test	(ICT9)
EOC - FDF Interface Confidence Test	(ICT10)
EDOS - ASTER GDS Interface Confidence Test	(ICT11)
EOC - ICC/IST Interface Confidence Test	(ICT13)
EOC - ASTER GDS Interface Confidence Test	(ICT14)
AM-1 Spacecraft Operations Confidence Test	(EGS1)
AM-1 Contingency Mode Operations Confidence Test	(EGS2)
ASTER Instrument Operations Confidence Test	(EGS6)

Membership

Team Lead - Code 505
EGS I&T Contractor
Flight Operations Team
ECS Project
EDOS Project
EBnet Project

5.2.4   Science Systems and Operations Integrated Product Team (SSO-IPT)

The Science Systems and Operations IPT (SSO-IPT) is responsible for the integration of the science data production, data archiving, and data distribution elements with the EGS. EGS functions, under the cognizance of the SSO-IPT, include science data ingest, ancillary data ingest, production planning and scheduling, production performance testing, product archiving, and product access and delivery. The SSO-IPT is responsible for the development, maintenance, execution, and results reporting for functional qualification confidence test packages of the SDP component and the DAAC interfaces.

The EGS I&T plan is to execute the SDP Functional Qualification tests as primary vehicle to accomplish the joint EGS I&T/DAAC objectives of: 1) pre-SSI&T/DAAC test general

functionality checkout of the system and procedures as configured and delivered to the DAACs, and 2) Operational Scenario functional capability testing.

Under the direction of the SYS-IPT, the SSO-IPT supports joint tests with the flight projects involving the DAACs, such as the TRMM Mission Simulation Series. The following tests from the current confidence test suite are assigned to the SSO-IPT:

Data Ingest and Archive Confidence Test	(SFQ1)
Science Data Production Confidence Test	(SFQ2)
Data Access and Transfer Confidence Test	(SFQ3)
System Administration Confidence Test	(SFQ4)
V0 Interoperability Confidence Test	(SFQ5)
Data Manipulation Confidence Test	(SFQ6)
ASTER Science Operations Confidence Test	(EGS9)
AM-1 Science Operations Confidence Test	(EGS10)
DAAC - SCF Interface Confidence Test	(ICT1)
DAAC - EDOS Interface Confidence Test	(ICT3)
DAAC - ADC Interface Confidence Test	(ICT4)
ECS - GSFC DAAC Interface Confidence Test	(ICT5)
ECS - Landsat 7 Interface Confidence Test	(ICT8)
DAAC - ASTER GDS Interface Confidence Test	(ICT12)

Membership

Team Lead - Code 505
ECS Integration & Acceptance Test Manager (IATM)
EGS I&T Contractor
ECS I&T Contractor
ECS M&O
ECS Science Office
ECS V0 Data Migration
ECS DAAC Liaisons
DAAC SEs
EDOS Project
EBnet Project
ETS Representative
Test Data Coordinator
TRMM Representatives
Landsat 7 Representatives
Instrument Team Representatives
Investigator / Science User Representation

5.2.4.1 DAAC Performance Characterization and DAAC-Unique Tests

In addition to standardized ECS infrastructure testing at the DAACs, there is a need to accurately characterize DAAC performance with the science software integrated into the ECS and to perform certain DAAC-unique tests at each DAAC.

Because local DAAC expertise is essential to these tests, they will be performed under the auspices of the SSO-IPT with the local DAAC representatives designated as test leads. As test leads, the local DAAC representatives manage the development and execution of the tests.

5.2.5 EDOS Integrated Product Team (EDOS-IPT)

The EDOS IPT administers the EDOS test program under the direction of the EDOS I&T manager. EDOS tests are documented separately in their systems and acceptance test plans and procedures. The ESDIS I&T organization (GSFC code 505) maintains a representative on the EDOS IPT to gain insight into the EDOS test program, to help select tests from the EDOS test program that meet the needs and objectives of the EGS Confidence Test Program, and to coordinate EDOS support to EGS Interface and EGS System level confidence tests.

Membership

> Team Lead - Code 510
> EGS I&T Contractor
> EDOS Project
> EDOS QA
> EDOS Developer
> EDOS M&O
> EDOS I&T
> EDOS Acceptance Test

5.2.6 Support Systems

The Support Systems group, although not an IPT, defines the institutional test plans as well as the network need dates and tests. The Support Systems group is also responsible for establishing institutional upgrades and need dates. Members may be called upon to provide input to institutional test plans and aid in the determination of test needs and schedule dates.

Membership

> Code 505
> EGS I&T Contractor/SYS-IPT
> Nascom
> SN/NCC
> Ground Networks
> SDPF
> FDF
> EDOS Project
> EBnet Project

5.3   EGS I&T Confidence Test Packages

5.3.1   Confidence Test Package Content

Conceptually, a confidence test package may be thought of as a binder divided into the following folders (See Exhibit 5-2):

- Plan/Procedures
- Discrepancy Reports
- Related Non-Conformance Reports (NCR)
- Historical Archive
- Lessons Learned
- Execution Cover Sheets

Each confidence test package developed for the EGS I&T Program contains all of these folders. An automated client/server tool, the Test Management Data Base (TMDB), is used to help generate test plans and procedures, map requirements to tests, maintain a historical archive, capture and report test results, and provide various metrics. Joint test packages are tailored to contain only those folders needed to support EGS participation in the test. Periodically, formal baselines of the complete set of Confidence Test Packages (CTPs) are exported to the EGS I&T WWW HomePage library for external review (URL: http://fairmont.ivv.nasa.gov/it/).   In addition, work-in-progress CTPs are accessible through EGS I&T WWW HomePage Common Gateway Interface (CGI) hotlink to the TMDB. Finally, there are additional views of the CTP information through the EGS I&T WWW HomePage, including summarized EGS I&T information in regularly updated matrix charts.
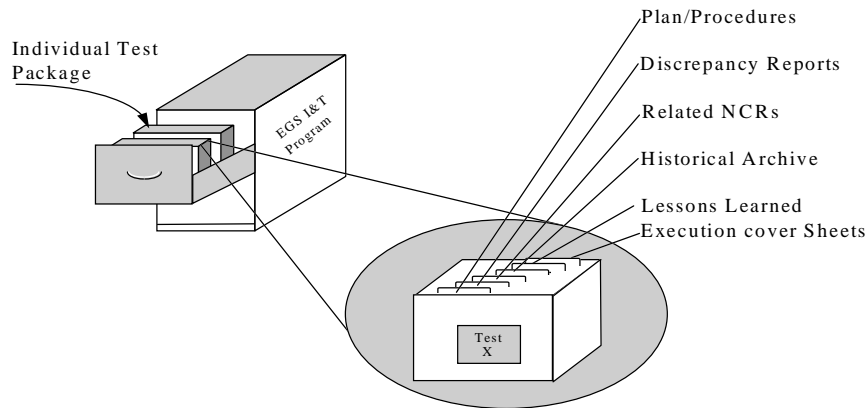
EXHIBIT 5-2: Test Package Structure

The plans/procedures are developed to reflect the final system capabilities to the best understanding of the IPTs. Subsets of the CTP procedures reflecting the delivered system capabilities are run for particular EGS versions as described in the execution cover sheets.

The content of each CTP section is described in the following paragraphs.

5.3.1.1 Plan/Procedures Folder

A plan/procedures document is generated for each confidence test in the following format:

TITLE

Test Objectives:

Identify the functional capabilities being exercised.

Requirements to be Verified:

List mission critical requirements to be verified by the test.

Test Configuration:

Provide a block diagram showing the major processing elements, data flows, and data communication mechanisms.

Participants and Support Requirements:

Identify the participating organizations and equipment, circuits, and personnel support provided. For example,

> EBnet - circuit from EDOS - EOC
> FOT - Command Activity Controller Operator
> EOC - 2 operator workstations, real time system

Identify any test tool requirements in this section.

Test Data:

Describe and identify by file name, script name or other designation all required test data sets. Provide the source and physical locations of the data. The description should include volumes and errors or insertion of anomalous conditions.

Test Case Descriptions:

Provide a brief narrative description of each test case along with high level success criteria. Note that the goal for test cases is to be modular and focused on certain capabilities or functions, thus providing maximum flexibility to focus on delivered capabilities or those areas of current interest during test execution.

Test procedures:

Provide major event-level procedures in three sections: test set-up, test execution, and test termination. See Exhibit 5-3 for an example of the format (Test Execution example) [1] used in these sections.

Step	Station	Operator Action	Expected Results	Comments
1.001	EDOS	Verify lock and processing of return link Health and Safety data to the EOC.	Solid lock, no data dropouts or encoding errors.	Data pass approx. one hour in duration.
1.002	EOC Spacecraft Activity Controller	Verify lock and processing of data on the xyz telemetry page.	Dynamic data updating at user defined interval.	Update rate set at 5 secs.

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[1] Note: final procedures are more detailed than the example shown in Exhibit 5-3, which is intended to show format only.

Step	Station	Operator Action	Expected Results	Comments

EXHIBIT 5-3: Procedure Format

5.3.1.2 Discrepancy Reports Folder

Maintain a file of all discrepancy reports initiated as a result of running this package. This may be by hard copy or by query to the Discrepancy Report Tracking Tool (DRTT) as maintained on the World Wide Web site at URL: http://iree.gsfc.nasa.gov/ddts/.

5.3.1.3 Related NCR Folder

Maintain a file of NCRs affecting functionality exercised by this test, either by hard copy or reference to on-line NCRs.

5.3.1.4 Historical Archive Folder

Contains a snapshot of all past formal executions of the test package. Data includes copies of the test procedure, the daily test summary reports, summary assessments, and the execution cover sheet used to define the test.

5.3.1.5 Lessons Learned Folder

Maintain a hard copy or electronic file of lessons learned from execution of this test, including recommendations for changes in procedures and data, changes to operational procedures, NCRs, etc.

5.3.1.6 Execution Cover Sheet

Specify the portions of the procedures to be executed for the current performance of the test. Record entrance and exit criteria, hardware and software configurations used. At a high level describe the most likely risks to successful completion of the test, and possible work arounds to mitigate them.

5.3.2 Test Production and Execution Process

The test production and execution process is a closed loop process supporting continuous improvement as illustrated in Exhibit 5-4. The phases of the process supporting the EGS Confidence Test Program are:

1) Confidence test package development
2) Coordination and scheduling
3) Execution and reporting

EXHIBIT 5-4: Confidence Test Production Process
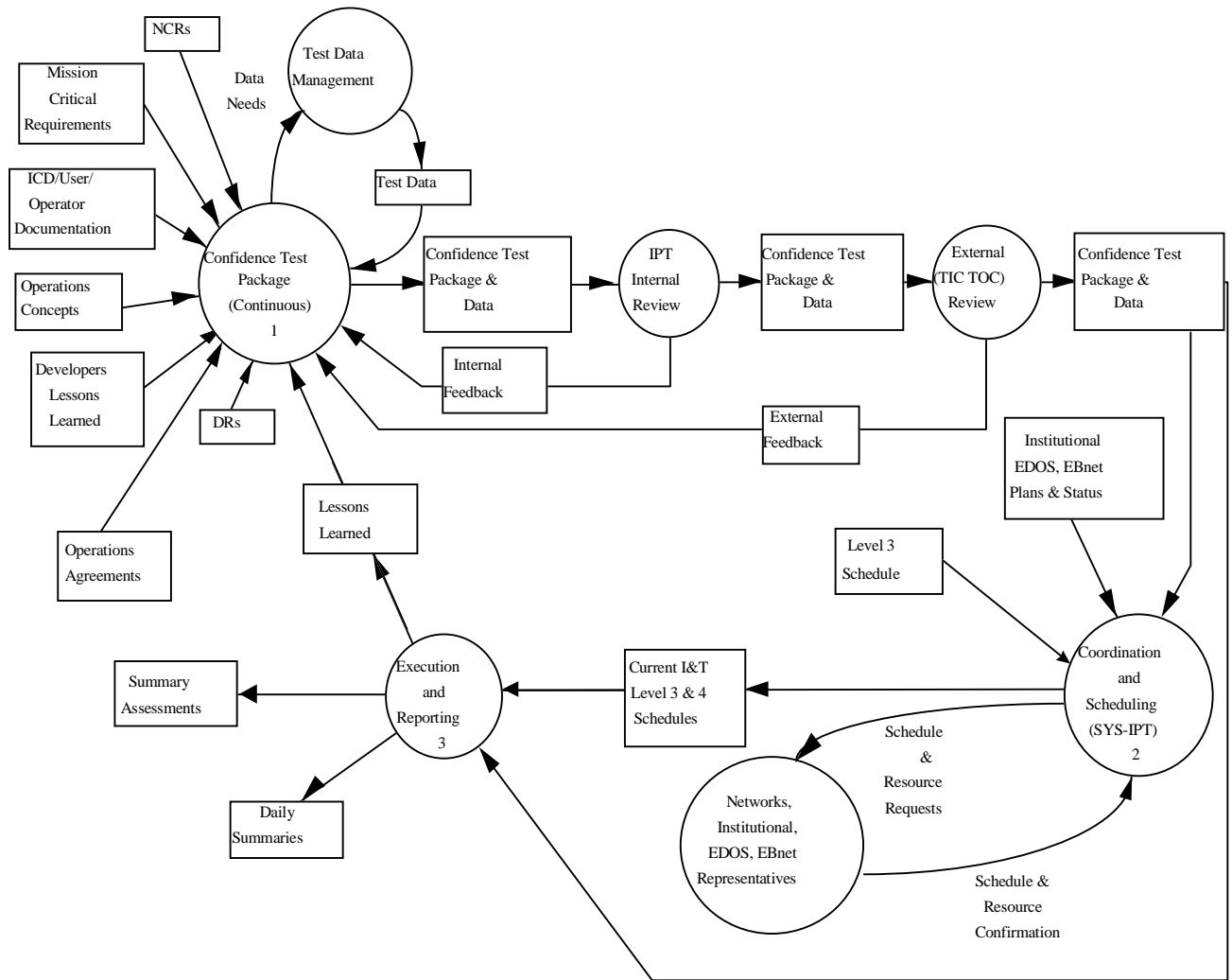
5.3.2.1 Confidence Test Package Development Phase

Inputs: Operations Concept Documents (Operational Scenarios)
Operations Agreements
ICDs/User and Operator Guides
Mission Critical Requirements
Test Data Management (TDM)
Development I&T lessons learned
Relevant DRs
Relevant NCRs

Process: A designated member of the cognizant IPT develops a draft confidence test package from the inputs and provides it to the other IPT members for review. Test data is identified and generated or obtained. The IPT conducts internal review and revision of the draft until it is ready for wider review by TICTOC members, particularly if it requires any institutional support. Upon receipt and incorporation of comments from the TICTOC, the package is posted, resources are coordinated, and dry run and "for the record" executions are scheduled. Tests scheduled as dry runs are executed for the purpose of refining test procedure steps. Dry run tests are run during the confidence test package development phase and before formal "for the record" test execution.

Outputs: Confidence Test Package
Test Data

5.3.2.2 Coordination and Scheduling Phase

Inputs: Confidence Test Package
Test Data
EDOS / EBnet / Institutional element plans and status
EGS I&T Level 3 Schedule

Process: EGS I&T IPT leads or SYS-IPT Mission Coordinators coordinate with the participating organizations to ensure that support requirements are understood and available in the planned time frame. When conflicts and inconsistencies are resolved, the EGS I&T Program Level 4 schedule is updated and corresponding updates are made to the ESDIS Level 3 schedule.

Outputs: Current I&T Level 3 and 4 schedules
Resources coordinated and scheduled

5.3.2.3 Execution and Reporting Phase

Inputs: Confidence Test Package
Test Data
Current EGS I&T Level 3 Schedule
Current EGS I&T Level 4 Schedule

Process: During this phase, those portions of the package that the current configuration of the EGS supports are executed as "for the record" tests. During test execution, "for the record" test procedures are run, "red-lined" as necessary, test data errors are corrected, and DRs are submitted for any system problems uncovered. Daily summary reports are issued and lessons learned are recorded and fed back to the next iteration of the package. Test execution results are logged into the Test Management Data Base (TMDB) tracking tool for metrics calculation and reporting. For confidence test suites executed to evaluate an EGS version or major component incremental delivery, a summary assessment is provided when all tests have been completed. To the maximum extent possible, tests are piggybacked. For example, if the EDOS project has scheduled a systems level test that executes a corresponding EGS I&T confidence test, that test run is considered to be execution of the EGS I&T confidence test.

Outputs: Revised Confidence Test Packages
Discrepancy Reports
Daily Summary Reports
Logged Test case execution results
Summary Assessment
Lessons Learned
Historical Archive

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6. EGS I&T Program Test Automation

6.1 Overview

The EGS I&T Program utilizes various test tools to assist in achieving program objectives. These tools are utilized during the planning, execution, and analysis phases of the test program. Commercial-off-the-shelf (COTS) and contractor developed tools are used, and provide the following benefits to the EGS I&T Program:

- Allow more thorough testing
- Permit test repeatability and reusability
- Track test results and discrepancies
- Simplify regression testing
- Reduce test development, product delivery, and test case modification time
- Improve EGS I&T team productivity
- Support early test procedure verification
- Provide metrics based on test planing and execution
- Enhance communications among team members at remote sites

6.2 Tooling Inventory

Tools that are used across the EGS I&T Program effort are listed in Exhibit 6-1.

EXHIBIT 6-1: EGS I&T Program Tools

Tool Name	Developer	Description
Discrepancy Report (DR) Tracking Tool (DRTT)	NASA/CSC	Manages and tracks all defects and discrepancies that are encountered during EGS test activities. Used to submit DRs to ERB and/or ECSRB for processing. Produces metrics for management overview of problems encountered during testing.
EOSDIS Test System (ETS)	NASA/ATSC/CSC	A test system comprised of the following three simulators: MPS is a low fidelity s/c simulator used to support testing of forward link and non-science return link processing. HRS is the EOSDIS return link science data processing and interface test tool. LRS is the functional EDOS interface between the EOC and either the SCITF or SSIM.

Tool Name	Developer	Description
LoadRunner	Mercury	Used to perform load analysis in a client/server environment. Capabilities include load testing (i.e., multiple user emulation), performance testing (system response time, user load generation measurement), and system tuning (results, behavior, and performance analysis).
NCC Development, Test, and Training (NCC DT&T) System	Booz-Allen Hamilton	Simulates the external interfaces to the Network Control Center Data System (NCCDS), as well as the NCCDS itself, in real time, while logging test results for data analysis and reduction.
RTM	Marconi Systems Technology	Used during test planning as input for requirements coverage.
Internet Scanner SAFEsuite	Internet Security Systems	Provides a comprehensive set of network security assessment tools designed to audit, correct and monitor all aspects of an enterprise network security. Capabilities include scans for over a hundred intranet security vulnerabilities, real-time system security profiles of individual hosts, continuous check for file ownerships and permissions, operating system configurations, Trojan Horse programs, and signs of a hacker's presence.
Software Modification Report (SMR)	NASA	Used to report errors and discrepancies for TSS/TST testing. Records detailed report of test problem for developer resolution.
Spacecraft Simulator (SSIM)	Lockheed-Martin	Provides a high fidelity simulator for Flight Operations Team training and ground system integration and test. The SSIM provides dynamic health and safety and housekeeping telemetry in all rates and formats. The SSIM will accept real time and stored commands and provide a much broader range of telemetry responses to commands sent from the EOC.
Test Buddy	N/A	A portable PC used at remote sites to provide an interface between remote testers and local management. Also provides access to other test tools at remote sites.
Test Management Data Base (TMDB)	Intermetrics	This tool is used throughout the test program. Test cases and procedures are generated using this tool. The tool also provides access to the most current test procedures at remote sites. The tool imports data from the RTM database in order to map requirements to tests. Testers

Tool Name	Developer	Description
		utilize the tool to plan test sessions, collect test session results, support report production (daily, flash, and formal test reports), and calculate metrics.
XRunner	Mercury	Multi-faceted capture/replay test tool used to support multiple types of testing, including automated and regression testing. Capabilities include test script development and reuse, test recording of system operational steps, and automated verification.

6.3 Tooling Allocation to Confidence Test

EXHIBIT 6-2: Tooling Allocation to Confidence Test Packages

TEST	*TOOL*			
ICT 1	TMDB	RTM	DRTT	
ICT 3	TMDB	RTM	DRTT	
ICT 4	TMDB	RTM	DRTT	
ICT 5	TMDB	RTM	DRTT	
ICT 8	TMDB	RTM	DRTT	
ICT 9	TMDB	RTM	DRTT	NCC DT&T
ICT 10	TMDB	RTM	DRTT	
ICT 11	TMDB	RTM	DRTT	ETS
ICT 12	TMDB	RTM	DRTT	
ICT 13	TMDB	RTM	DRTT	
ICT 14	TMDB	RTM	DRTT	ETS
ICT 15	TMDB	RTM	DRTT	
EOC 1	TMDB	RTM	DRTT	ETS, SSIM
EOC 2	TMDB	RTM	DRTT	ETS, SSIM
EOC 3	TMDB	RTM	DRTT	NCC DT&T
EOC 4	TMDB	RTM	DRTT	ETS, SSIM
EOC 5	TMDB	RTM	DRTT	XRunner, LoadRunner
SFQ 1	TMDB	RTM	DRTT	ETS
SFQ 2	TMDB	RTM	DRTT	
SFQ 3	TMDB	RTM	DRTT	XRunner, LoadRunner
SFQ 4	TMDB	RTM	DRTT	
SFQ 5	TMDB	RTM	DRTT	XRunner
SFQ 6	TMDB	RTM	DRTT	XRunner

EGS 1	TMDB	RTM	DRTT	
EGS 2	TMDB	RTM	DRTT	ETS, SSIM
EGS 3	TMDB	RTM	DRTT	
EGS 5	TMDB	RTM	DRTT	
EGS 6	TMDB	RTM	DRTT	ETS
EGS 7	TMDB	RTM	DRTT	SAFEsuite
EGS 8	TMDB	RTM	DRTT	
EGS 9	TMDB	RTM	DRTT	
EGS 10	TMDB	RTM	DRTT	
EGS 11	TMDB	RTM	DRTT	
TST 01	TMDB		SMR	
TST03	TMDB		SMR	

7. EGS I&T Program Metrics

7.1   Goals and Development

The EGS I&T Program metrics consist of a set of quantitative process and product measurements that focuses attention on the issues of schedule, productivity, and quality. These measurements serve as a system of checks and balances throughout the EGS I&T Program. In the context of the EGS I&T Program:

> 1.***Process*** metrics are designed to focus on the question,
>   "How much EGS I&T activity is complete vs. planned?

> 2.***Product*** metrics are designed to focus on the question,
>   "How mission ready is the EGS?"

An example of a ***process*** specific metric is *confidence test package generation progress*. This metric tells the program whether schedule and productivity targets are being met.

Examples of ***product*** specific metrics are *defect per component* and *defect per subsystem*. A particular case where these metrics can be applied is in interface test result analysis. The *defect per component* correlated with *defect per subsystem* may show that one particular set of interfaced components are experiencing more difficulties than others when executing a variety of functions.   Alternatively, these metrics may show that all interfaced components experience failure on a specific common function, such as error recovery. The EGS I&T product metrics can be used to give the developers tangible feedback to more quickly and effectively correct system defects.

The basic goals of the EGS I&T Program metrics are to:

- Provide a quantitative evaluation of the EGS I&T process and the EGS product
- Confirm initial estimates of EGS I&T time and resources, and EGS product quality
- Guide decisions on EGS I&T Program resources, schedule, and priority adjustments
- Identify when and where process improvements are needed on the EGS I&T Program
- Provide trend analyses

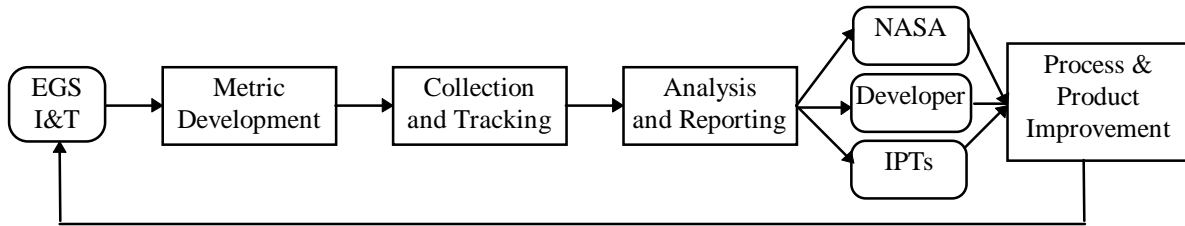Exhibit 7-1 describes the EGS I&T Program metrics process.

Exhibit 7-1: EGS I&T Program Metrics Process

The following subsections show, by metric category, the data being collected, the use of each data item, the planned frequency for collecting the measures, and the collection source.

7.1.1   Process Metrics

Process metrics are measures of effort and schedule. Effort is measured through the relationship between planned or estimated time and resources and actual time and resources expended. The variations between the planned baseline schedule and actual performance is also measured. Exhibit 7-2 describes the process metrics.

EXHIBIT 7-2: Process Metrics

Process Metric	Purpose	Definition	Frequency (Collect/ Analyze)	Source
Confidence test package generation (total count): • Number of tests for: -Interface -Component -EGS System • Number of test cases for: -Interface -Component -EGS System	• Monitor whether work units are generated with planned resources • Quantify process stability and schedule risks • Replanning aid	Count tests and test cases generated.	Daily automatic collection and on-line reporting. Collected during test planning phase. Monthly/ monthly	• TMDB

Process Metric	Purpose	Definition	Frequency (Collect/ Analyze)	Source
Test execution time	Provides: • Regression test time benchmark • Basis for estimating time needed to complete tests	Local clock time recorded.	Daily collection and on-line reporting. Collected during test execution.	• Load Runner • Testers
Computer resource utilization	• Helps to establish a baseline for regression tests • Input to schedule tests in an operations environment • Can be used to identify design instabilities	Records CPU utilization. Includes system and network statistics.	Daily collection and on-line reporting. Collected during test execution.	• Load Runner • Testers
Test data files (required versus received)	• Indicates completion progress and quality • Replanning aid • Determine early test data needs (simulated or existing test data files)	Percent of specific or unique test data files required during testing versus what is actually received per EGS version.	Monthly/ monthly	• Testers and Test Data Generatio n rep.
Test execution (planned versus actual):	• Indicates completion progress and	Count of the number of test cases executed.	Daily automatic collection	• TMDB • EGS I&T Session

Process Metric	Purpose	Definition	Frequency (Collect/ Analyze)	Source
• Number of test cases for: -Interface -Component -EGS System	quality • Replanning aid • Quantifies performance toward meeting commitments for delivering products		and on-line reporting. Collected during test execution.	Execution Summary Sheet
Number of joint tests participated in (planned versus actual)	• Indicates completion progress and quality • Quantifies performance toward meeting commitments for delivering products	Count of the number of joint tests.	Weekly/ weekly. Occurs during test execution.	• TMDB • EGS I&T Session Execution Summary Sheet
Number of changes to test data files during formal execution	Stability indicator.	Count of the changes to test data files.	Weekly/ monthly	• EGS I&T Daily Test Summary

7.1.2 Product Metrics

Product metrics measure the quality of the delivered EGS configuration. One of the broadest after-the-fact measures is defect tracking. A defect can be recorded and tracked against any element where there is potential rework as a result. This measure indicates the readiness of the product to proceed to the next phase, including review or delivery. Exhibit 7-3 describes the product metrics.

EXHIBIT 7-3: Product Metrics

Product Metric	Purpose	Definition	Frequency (Collect/ Analyze)	Source
Number of DRs found by EGS I&T (total): • Number of DRs opened • Number of DRs fixed	• Determine testing phase progress • Quantifiable measure of software and testing phase quality • Track the rate of defect closure • Trend analysis of remaining unresolved defects	Count of the defects opened, fixed, and total found by EGS I&T.	Weekly/ bi-weekly. Occurs during test execution. Alternately, daily automatic collection and on-line reporting through DRTT.	• TMDB • EGS I&T Session Execution Summary Sheet • DRTT
Type of DR	Determine what type of defect occurs most often (software, COTS, hardware).	Classification and count of defect types.	Daily automatic collection and on-line reporting.	• DRTT
Severity of DR	Determine which defect severity level occurs most often.	Classification and count of defect severity levels (1,2,3).	Daily automatic collection and on-line reporting.	• DRTT
Origin of DR	Determine which software development life cycle phase yields the most defects (test execution).	Classification and count of defect origins.	Daily automatic collection and on-line reporting through DRTT.	• DRTT • ESDIS Manage-ment Summary of General Statistics
Defects per EGS Component	Determine which component yields the most defects.	Classification and count of component defects.	Daily automatic collection and on-line reporting	• DRTT

Product Metric	Purpose	Definition	Frequency (Collect/ Analyze)	Source
			through DRTT.	
Defects per Subsystem	Determine which subsystem yields the most defects.	Classification and count of subsystem defects.	Daily automatic collection and on-line reporting through DRTT.	• DRTT
Test analysis requirements: • Passed • Failed • Partially tested	• Determines testing progress • Replanning aid	Count of the number of requirements executed as appropriate.	Daily automatic collection and on-line reporting. Collected during test execution.	• TMDB • EGS I&T Session Execution Summary Sheet
Number of changes to Level 3 requirements	Stability indicator.	Count of the changes to Level 3 requirements.	Periodic automatic reporting through RTM, based on releases.	• RTM

7.2   Collection and Tracking

In order to yield the described metrics, timely and consistent data must be periodically collected throughout the EGS I&T Program. The majority of data is collected as an automated by-product when regularly recorded test data is entered into on-line vendor supplied or in-house developed test data collection and tracking tools. Examples of automated data collection and tracking include requirements and Traceability tools, such as the RTM and TMDB, defect tracking tools, such as the DRTT, and testing tools, such as LoadRunner and XRunner. Other tracking tools include spreadsheet, database, and project management software.

Within the TMDB, two on-line data collection and tracking forms are used to capture both planning and actual test metrics. The EGS I&T Execution Cover Sheet captures the test planning metrics, such as test cases to be executed, planned execution date and test

duration, as well as planned software and hardware resources. During formal testing, the EGS I&T Execution Cover Sheet captures percent complete and number of execution attempts. After final test session execution, the EGS I&T Execution Cover Sheet captures the actual execution date, "as run" configuration, test cases executed and procedure deviations, as well as the capabilities successfully demonstrated, not successfully demonstrated, requirements verified, and DRs submitted. The EGS I&T Test Session Reporting Sheet captures the final "for the record" test session reporting metrics. These include actual test cases executed and the status of each test case procedure step, such as failed, passed or partially tested.

7.3   Analysis and Reporting

Analyzing the data involves the continuing ability to store, retrieve, manipulate, and perform analysis of the metric data. This effort produces a baseline set of process and product models for the program. Once a baseline is established, analysis involves the examination of metric data to determine how trends correlate with program accomplishments and difficulties. Analysis also focuses on determining the impact of changes to processes and the introduction of new technologies or tools and approaches.

The EGS I&T Program metric analysis supports generation of reports which summarize the program goal, the results measured, and the conclusions reached. Report summaries can be tabular or graphical. The TMDB and DRTT tools automatically generate certain tabular metric reports, while the LoadRunner and XRunner tools automatically generate graphical and tabular metric reports. Graphical data reporting is often an extension of tabular data in which text and numerical data is displayed in pie charts, line graphs, Gantt charts, and histograms.

The generation and distribution of summary reports is performed as indicated in the EGS I&T contractor's Statement of Work (SOW). These report summaries can range from single test case summaries to multi-project roll-ups that provide high-level information for use in project comparisons.

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Appendix A - Requirements Verification Matrix

By Confidence Test Package ID

Confidence Test Package ID	Confidence Test Package Description	Requirement ID
V1-EOC-01	Telemetry Processing and Logging Confidence Test Test Package Description Background Information: The Telemetry Processing Service provides the capabilities needed to ingest, decommutate, engineering unit (EU) convert, and limit check housekeeping (H/K), health and safety (H&S), and diagnostic/memory dump telemetry from the EOS spacecraft (S/C) subsystems and on-board instruments. The processing of diagnostic/memory dump telemetry is covered in the EOC2, Command Processing Confidence Test. The telemetry data will be downlinked through a TDRSS S-band Single Access (SSA), S-band Multiple Access (MA) or Ku-band Single Access (KSA) service with a dual channel interface. During normal operations, the H/K data is recorded on the EOS AM-1 solid state recorders (SSRs) and played back during a TDRSS KSA return service at 150 Mbps (75 Mbps/75 Mbps). Recorded H/K telemetry is also played back at 256 kps using the SSA service for anomaly investigations. The real-time H/K (16 kbps) and H&S (1 kbps), and diagnostic/dump (1 kbps, 16 kbps) telemetry will be downlinked through a SSA or MA service. TDRSS ground terminals (WSGT/STGT) forward the telemetry data which is in Consultative Committee for Space Data Systems (CCSDS) packets to EDOS in Channel Access Data Unit (CADU) format via EBnet. Low-rate telemetry is forwarded directly to the EDOS Level Zero Processing Facility (LZPF). High-rate telemetry is first sent to the EDOS Ground Station Interface Facilities (GSIF) and then transferred to the LZPF at reduced rates. EDOS receives telemetry in CADU format. It extracts the CCSDS packets and Command Link Control Words (CLCWs). The CCSDS telemetry packets are processed and	EDOS-4.1.1.3#A EDOS-4.6.1.2#A EOC-0040#A EOC-5010#A EOC-5015#A EOC-5070#A EOC-5080#A EOC-5090#A EOC-5100#A EOC-5110#A EOC-6060#A EOC-6070#A EOC-6195#A EOC-9025#A

converted to EDOS Data Units (EDUs) based on the Application Process Identifier (APID), the Virtual Channel Identifier (VCID), and the replay flag. An EDU consists of an EDOS Service Header (ESH) and a Path Service Data Unit (SDU). The ESH contains the quality and accounting data. The Path SDU is simply the Version-1 CCSDS packet. The real-time Path Service EDUs are sent to the EOC via EBnet using UDP, to specific multicast IP addresses (operational and test) and UDP ports per mission as defined in the applicable Operations Agreement (OA). The recorded EDUs are transferred in rate-buffered data files via EBnet using KFTP. The KFTP interface details such as EOC User IDs, IP addresses, host names, and file directories are defined in the applicable OA. Customer Operations Data Accounting (CODA) Report (which includes a Ground Message Header) is also sent to the EOC via EBnet using UDP. The CODA Report describes the operational activities of EDOS per S/C, this includes summaries of quality and accounting information (e.g., status of EDOS return and forward links, and VCDU service; and SCS statistics), but no information about Operations Management data is provided.

Upon receiving real-time telemetry, the Telemetry Processing Service decommutates the contents of the packets, performing the necessary EU conversions and parameter derivations. Various forms of limit checking are performed on the telemetry parameters, including boundary limit checking on analog parameters, and delta limit checking (examining the difference between successive parameter samples). For each parameter being checked for boundary limits, the Telemetry Processing Service uses one of several limit sets, in which each limit set consists of definition for one or more upper and lower boundaries for the parameter (e.g., red high/low and yellow high/low limit sets.) All parameters, along with associated limits, quality, and event information, are made available to the operator via the FOS User Interface Service.

Eventually, the telemetry data, and related event and configuration data are sent to the FOS DMS for temporary storage. The FOS DMS maintains the data files for a user configurable number of days, then the data is sent to the Science Data Processing Segment (SDPS) for permanent archival. The data remains at the FOS DMS for minimum of

	seven days, but the data may be removed after seven days if confirmation of successful storage is received from the SDPS Data Server. FOS DMS also provides access to the Operational Database (ODB). Test Objectives: The objectives of the test are to: + Verify that EOC can ingest and process the following types of telemetry packets from the ETS, SSIM, or AM-1 S/C at the specified data rates: 1. Real-time instrument and S/C bus H/K telemetry (16 kbps) 2. Real-time instrument and S/C bus H&S telemetry (1 kbps) 3. Recorded instrument and S/C bus H/K telemetry (256 kbps, 150 Mbps [ETS HRS and AM-1 S/C only] 4. Command/Telemetry Interface Unit (CTIU) standby telemetry (1 kbps) + Verify that the EOC can ingest and process real-time data (e.g., two 16 kbps data streams) sent simultaneously. + Verify that all telemetry types can be decommutated and the results displayed in soft copy and hardcopy form. + Verify proper EU conversion, limit and alarm check processing, and derived parameter generation. + Verify that when any critical telemetry parameter limit is exceeded, the violations are reported and any related alarm mechanisms respond properly. + Verify proper checking of context dependency and discrete state values of telemetry parameters. + Verify the merging of R/T and recorded telemetry to create a complete hourly file that is archived at the FOS DMS. + Verify that the EOC can store and retrieve telemetry data from the temporary (FOS DMS) and permanent (SDPS) archive sources for reuse.	
V1-EOC-02	EOC2 Command Processing Confidence Test Planning and scheduling activities produce the detailed activity schedule that is used for command generation. An integrated schedule of activities for instruments and spacecraft subsystems is produced, and the ground scripts and command loads necessary to implement the scheduled activities are generated. FOS collects and validates the commands, software memory loads, table loads and	EDOS-4.1.1.2#A EDOS-4.2.1.5#A EDOS-4.6.1.3#A EOC-0040#A EOC-3080#A EOC-3238#A

| | instrument memory loads necessary to implement the instrument and spacecraft scheduled activities.

The command data is transmitted to EDOS for uplink to the spacecraft during each real-time contact. Command requests can be received from the ISTs in real-time by the operational staff or as preplanned command groups generated by the Command Management Service. Command execution on-board the spacecraft is verified via returned telemetry.

FOS maintains the current spacecraft memory image and performs memory dump compare operations, as requested.

Exhibit EOC2-1 illustrates the paths and associated rates for uplink from EOC to the EOS AM-1 spacecraft [based on ref 16 page 2000-3]. The three path rates from TDRS to EOS AM-1 will be verified in this test, the emergency path via GN/WOTS will be verified in test EGS2.

Test Objectives:
The command processing confidence test will:
+ perform real-time commanding and load uplinks at all rates and formats to the prime and back-up Command and Telemetry Interface Units(CTIU)
+ verify proper implementation of CCSDS commanding protocols, and inhibition of critical and hazardous commanding
+ verify ability to conduct Onboard Computer (OBC) load, dump, and compare sequences.

Test Configuration:
Exhibit EOC2-2 illustrates the Command Processing Test configuration with the ETS MPS being used to simulate EDOS and the spacecraft. The initial execution of EOC2 will utilize the simulator located at GSFC building 32. Exhibit EOC2-3 illustrates the next test configuration when EDOS is available. The ETS MPS will be used to simulate the spacecraft. Exhibit EOC2-4 illustrates the final test configuration when the TDRS system will be used along with the RFSOC and SSIM for the highest level of testing fidelity before the actual s/c is available. | EOC-4005#A
EOC-4008#A
EOC-4010#A
EOC-4015#A
EOC-4018#A
EOC-4020#A
EOC-4100#A
EOC-4140#A
EOC-4200#A
EOC-6110#A
EOC-8130#A
EOC-9025#A
EOC-9080#A
EOC-9110#A |
| V1-EOC-03 | Planning and Scheduling Confidence Test

The objective of this test is to verify that the EOC can produce an integrated schedule of activities for instruments | EOC-2020#A
EOC-2030#A
EOC-2070#A
EOC-2170#A |

	and spacecraft subsystems, and generate the ground scripts and command loads necessary to implement the scheduled activities. The test will verify that the EOC can perform critical functions during the following phases of the planning and scheduling process: - Long Term Planning - Initial Scheduling - Final Scheduling - Command Management	EOC-2180#A EOC-2200#A EOC-2210#A EOC-2220#A EOC-2250#A EOC-2270#A EOC-2272#A EOC-2280#A EOC-2290#A EOC-2300#A EOC-2310#A EOC-2320#A EOC-2350#A EOC-2460#A EOC-2480#A EOC-2482#A EOC-2490#A EOC-2510#A EOC-2540#A EOC-2550#A EOC-2555#A EOC-2620#A EOC-3020#A EOC-3030#A EOC-3050#A EOC-3090#A EOC-3160#A EOC-3210#A EOC-4010#A
V1-EOC-04	Telemetry Analysis Confidence Test Test Package Description The Spacecraft (S/C) Analysis Service provides the capabilities needed for management of the on-board systems and for overall mission monitoring. It allows the EOC operators to monitor and manage the S/C system configurations and resources; perform real-time (R/T) and off-line analyses of S/C bus and instrument data to track performance and trends, and detect and isolate anomalies. These analysis functions are provided on a non-interference basis with R/T telemetry processing functions. Only a subset of the analysis functions is provided in real time through the use of a FOS User Interface (FUI) Quick Analysis and SSR Analysis tools.	EOC-6010#A EOC-6050#A EOC-6070#A EOC-6100#A EOC-7060#A EOC-7120#A

	The Analysis Service evaluates the performance of the S/C subsystems and the status of instruments. Performance data are processed from spacecraft recorder and R/T housekeeping, and historical telemetry. The historical telemetry is retrieved from either short-term (FOS DMS) or long-term storage (SDPS). The EOC reports on the quality of the data used for the analysis, reports failures detected, and identifies marginal system operation. The EOC enables operators to analyze the performance of the power, command and data handling, thermal, communications, and guidance navigation and control subsystems. Test Objectives: The objectives of the test are: + Verify that the EOC can receive, process, and analyze S/C bus and instrument data to track performance and trends, and detect and isolate anomalies in real-time (R/T) or off-line. + Verify that system statistics (analog, discrete, and limit) are automatically generated at the EOC for telemetry parameters on daily, monthly, orbital, and mission-to-date time spans. + Verify that user-defined statistics (min-max-mean and standard deviation) for a specified time interval can be generated for a selected set of telemetry parameters. + Verify that the following types of requests can be performed: Quick Analysis, Replays, and Standing Orders. + Verify that the EOC can perform S/C Clock correlations to Coordinated Universal Time (UTC) and detect faults of Solid-State Recorder (SSR) playbacks. + Verify that the EOC can apply algorithms to S/C telemetry during off-line analysis. + Verify that carry-out files can be generated by the FOS Analysis Subsystem to contain the following: AM-1 S/C housekeeping data, AM-1 S/C health and safety data, and AM-1 diagnostic data, Network Control Center (NCC) operator data message (ODM) data, and EDOS Customer Operations and Data Accounting (CODA) message data. + Verify that S/C Analysis System (SAS) can receive carry-out files, SSR trash buffer files, and standard analysis products for specialized mission analyses which are not supported by the FOS Analysis Subsystem .+ Verify the storage and retrieval of carry-out files and other analysis products from the local EOC archive (short-term	

	storage) and the GSFC DAAC (long-term storage). Verify that the analysis products can be provided in both hardcopy and softcopy form	
V1-EOC-05	EOC Resource Management Confidence Test

The capability to manage and monitor the configuration of the EOC includes configuring the EOC resources for multi-mission support, facilitating operational failure recovery during real-time contacts, and managing the real-time interface with the NCC. The logical strings are controlled for telemetry monitoring and command- i.e., they enable FOS users to receive and monitor telemetry from one or more spacecraft and one or more instruments. In addition, requests from a Command Activity Controller for command authority and a Ground Controller for Ground Control authority are received. The privilege is granted to authenticated users, and ensures that only one person has command authority for a single spacecraft at any one time.

Test Objectives:
The Resource Management Confidence Test will:
+ demonstrate the ability to shift displays between various rooms and pages
+ verify the ability to assign key functions such as command activity controller and ground controller to various workstations
+ verify the ability to protect privileged operations, such as commanding
+ configure and de-configure logical processing strings
+ demonstrate the ability to failover to redundant or standby elements.

Test Configuration:
Exhibit EOC5-1 illustrates the Resource Management Test configuration with ETS and SSIM. Since the functions of Resource Management are internal to the EOC the AM-1 spacecraft is not required for this test. Exhibit to be updated to reflect use of ETS, and to show Release A and Release B configurations. | EOC-8140#A
EOC-9010#A
EOC-9020#A
EOC-9025#A
EOC-9110#A |
| V1-ICT-13 | EOC - ICC/IST Interface Confidence Test

The IST is a subset of the Flight Operations Segment (FOS) software developed to enable the Instrument Operations Teams (IOTs) to conduct the following broad functions:+ | EOC-2270#A
EOC-2290#A
EOC-2320#A
EOC-2350#A
EOC-2480#A |

+ Instrument activity planning and scheduling,+	EOC-2540#A
+ Instrument commanding, +	EOC-2550#A
+ Instrument telemetry monitoring and analysis,+	EOC-2620#A
+ Update instrumentÆs software,+	EOC-3020#A
+ Receive image (micro-processor memory dump) of instrumentÆs software.	EOC-3030#A
	EOC-5010#A
	EOC-6195#A
Interfaces with ASTER are contained in ICT14 EOC-ICC Interface Confidence Test and ICT11 EDOS-AOS Interface Confidence Test and will not be tested within this confidence test.	EOC-7015#A
	EOC-8285#A
	EOC-9010#A
	EOC-9025#A
	ICC-0030#A
Many of the functions and tools provided by the IST are also common to the EOS Operations Center (EOC). The general architecture of the IST is a set of tools interfacing to the users through a corresponding set of Graphic User Interfaces (GUIs). The GUIs provide the user interface to functions provided locally and functions provided in client-server mode by the FOS in the EOC.	ICC-2010#A
	ICC-2050#A
	ICC-2115#A
	ICC-2140#A
	ICC-2150#A
	ICC-2190#A
	ICC-2210#A
	ICC-2220#A
	ICC-2230#A
	ICC-2250#A
	ICC-2270#A
	ICC-2280#A
	ICC-2290#A
	ICC-2300#A
	ICC-2390#A
	ICC-2400#A
	ICC-3010#A
	ICC-3040#A
	ICC-3090#A
	ICC-3100#A
	ICC-3110#A
	ICC-3210#A
	ICC-3270#A
	ICC-4020#A
	ICC-4045#A
	ICC-4090#A
	ICC-4100#A
	ICC-4150#A
	ICC-4410#A
	ICC-4450#A
	ICC-4460#A
	ICC-4470#A
	ICC-4490#A

		ICC-4560#A
		ICC-4710#A
		ICC-4730#A
		ICC-4740#A
		ICC-4760#A
		ICC-4775#A
		ICC-4780#A
		ICC-4790#A
		ICC-6005#A
		ICC-6020#A
		ICC-6040#A
		ICC-6070#A
		ICC-6510#A
		ICC-6520#A
		ICC-6525#A
		ICC-6540#A
		ICC-6580#A
		ICC-6600#A
		ICC-7060#A
		ICC-7070#A
V1-TST-01	TSDIS/TSS and SDPF/LaTIS Overall Confidence Test	DADS0145
		DADS0170
	The Earth Observing System Data and Information System	DADS0250
	(EOSDIS) the data and information system for the EOS	DADS0281
	Mission, has the objective of providing a space and ground	DADS0290
	measurement system to provide the scientific basis for	DADS0300
	understanding global climate change. The first EOS	DADS0310
	instruments, Clouds and EarthÆs Radiant Energy System	DADS0370
	(CERES) and Lightning Imaging Sensor (LIS), will be	DADS0405
	launched in 1997 on the Tropical Rainfall Measuring Mission	DADS0410
	(TRMM) Observatory. LIS will be processed by the LIS	DADS0475
	SCF and CERES will be processed by the LaTIS using	DADS0490
	EOSDIS. The EOSDIS provides a user interface and	DADS0610
	information about EOSDIS data holdings on a 24-hour basis.	DADS0660
		DADS0760
	Test Objectives:	DADS1030
		DADS1070
	The objectives of this group of scenarios verifies that the	DADS1300
	TRMM Support System (TSS) and the Langley TRMM	DADS1380
	Information System (LaTIS) can support broad, multi-site	DADS1390
	interactive operations in support of mission planning,	DADS1400
	scheduling and science data access, and distribution. These	DADS1472
	scenarios verify the capabilities of TSS and LaTIS to enable	DADS1520
	the users and operators to perform multi-step processes,	DADS1530
	including multiple data sets searches and transfers. The	DADS1540

| | overall objective of this end-to-end test is to verify that the TSS and the LaTIS operates properly and can provide the full range of functional capabilities required to support the TRMM Mission Operations. The TSS components of the GSFC DAAC has responsibility for archive and distribution of TMI, PR, and VIRS data products, combined products which include PR and/or TMI data and other data, GV data products, and ancillary data. The LaTIS components of the LaRC DAAC has responsibility for ingest, archive, product generation, and distribution of CERES data from the Sensor Data Processing Facility (SDPF). The requirements to be verified in this test will be the ability of:

+ TSS to ingest and archive TRMM science data products from TSDIS.
+ TSS to distribute TRMM science data products to TSDIS for reprocessing.
+ TSS to distribute ancillary data to TSDIS for processing and reprocessing.
+ TSS to distribute TRMM products to TSDIS Science Users (TSUs) for data trending and analysis.
+ LaTIS to ingest and archive CERES Level 0 and quick-look data sets from SDPF.
+ LaTIS to ingest and archive Definitive and Predictive Orbit data from SDPF.
+ LaTIS to generate higher level CERES data products.
+ LaTIS to distribute data to TRMM Science Users.
+ LaTIS to ingest and archive VIRS 1B data from TSS. | DADS1550
DADS1630
DADS1780
DADS1791
DADS1795
DADS1800
DADS1805
DADS1806
DADS2160
DADS2180
DADS2276
DADS2300
DADS2315
DADS2320
DADS2340
DADS2410
DADS2430
DADS2450
DADS2480
DADS2490
DADS2510
DERIVE0001
EOSD0030
EOSD0560
EOSD0740
EOSD0750
EOSD0760
EOSD1010
EOSD1502
EOSD1607
EOSD1608
EOSD1703
EOSD2990
EOSD3000
EOSD3200
EOSD3220
ICD-0010
ICD-0030
ICD-0080
ICD-0090
ICD-0110
ICD-0150
ICD-0170
ICD-0180
ICD-0200 |

		ICD-0210
		ICD-0220
		ICD-0250
		ICD-0270
		ICD-0290
		ICD-0320
		IMS-0260
		LATIS0010
		LATIS0020
		LATIS0040
		LATIS0050
		LATIS0060
		SDPS0020
		SDPS0080
		SDPS0130
		TRMM1010
		TRMM1030
		TRMM1040
		TRMM1050
		TRMM1060
		TRMM1070
		TRMM1080
		TRMM1090
		TRMM1100
		TRMM1110
		TRMM1120
		TRMM1130
		TRMM1140
		TRMM1150
		TRMM1160
		TRMM1170
		TRMM1180
		TRMM1190
		TRMM1195
		TRMM1200
		TRMM1210
		TRMM1280
		TRMM3050
		TRMM4010
		TRMM4030
		TRMM4050
		TRMM4060
		TRMM4090
		TRMM4100
		TRMM4103

		TRMM4104
		TRMM5010
		TRMM5040
		TRMM8071
		TRMM8100
		TRMM8120
		TRMM8130
		TRMM8160
		TRMM8170
		TRMM8180
V1-TST-03	TSDIS/TSS Interface, Ingest and Archive Test The TRMM Support System, contained within the GSFC DAAC, has the responsibility for interfacing with the TSDIS Ground System for distributing TRMM science data products for reprocessing and to distribute ancillary data to TSDIS for processing and reprocessing. The TSS also distributes TRMM products to TSDIS Science Users (SUs) for data trending and analysis. The TSS provides a user interface and information about TRMM data holdings to the TSUs. The purpose of the TSS is to archive TRMM science data products, distribute TRMM products to TSDIS for reprocessing, distribute ancillary data to TSDIS for processing and reprocessing, and distribute TRMM products to TSDIS users. The TSS will interface with NOAA and TOMS data archives for the purpose of obtaining data products for distribution to LaRC DAAC, TSDIS and for archiving.	DADS0010 DADS0020 DADS0145 DADS0170 DADS0220 DADS0250 DADS0260 DADS0281 DADS0290 DADS0300 DADS0310 DADS0370 DADS0405 DADS0410 DADS0440 DADS0475 DADS0490 DADS0610 DADS0660 DADS0760 DADS1030 DADS1070 DADS1080 DADS1300 DADS1330 DADS1380 DADS1390 DADS1400 DADS1472 DADS1510 DADS1530 DADS1540 DADS1630 DADS1780 DADS1791

		DADS1795
		DADS1800
		DADS1805
		DADS1806
		DADS2160
		DADS2180
		DADS2315
		DADS2320
		DADS2340
		DADS2410
		DADS2430
		DADS2450
		DADS2490
		DADS2510
		DERIVE0001
		EOSD0020
		EOSD0030
		EOSD0750
		EOSD1502
		EOSD1607
		EOSD1608
		EOSD1703
		EOSD2440
		ICD-0010
		ICD-0020
		ICD-0030
		ICD-0040
		ICD-0080
		ICD-0090
		ICD-0100
		ICD-0150
		ICD-0170
		ICD-0180
		ICD-0200
		ICD-0210
		ICD-0220
		ICD-0230
		ICD-0250
		ICD-0260
		ICD-0270
		ICD-0290
		ICD-0320
		IMS-0240
		IMS-0260
		IMS-0350

		IMS-0450 SDPS0080 SDPS0120 TRMM3050 TRMM4010 TRMM4030 TRMM4040 TRMM4050 TRMM4060 TRMM4090 TRMM4100 TRMM4101 TRMM4103 TRMM4104 TRMM5010 TRMM5040 TRMMPRO0010
V2.0-EGS-01	AM-1 Spacecraft Operations Confidence Test To demonstrate the ability to operate the AM-1 spacecraft through the Space Network. This test will exercise the following flight operations capabilities under a nominal daily operations scenario.+ Planning and Scheduling to include Resource Models and Schedule Management.+ Command Management to include Load Management and Ground Script Generation.+ Commanding to include real time commanding and command load uplinks.+ Telemetry Processing from receipt to user display and history logging.+ Resource Management including the initial configuration of the logical strings for operations and failover to stand-by equipment. Failovers exercised will include: Failover to stand-by Real Time Server Failover to stand-by Data Server RAID element failure Timing Server Failure EBnet Router Failure FDDI Concentrator Failure FDDI - Ethernet Hub Failure FDDI router Failure	
V2.0-EGS-	AM-1 Contingency Mode Operations Confidence Test	AM1-0020#B

02		AM1-0030#B
	While in contingency mode, (TDRSS unavailable) EDOS does not receive any instrument, i.e. science data. Only the low rate channel housekeeping and playback data will be received. The housekeeping and playback data is sent to the EGS element in the same manner (by EDOS) as during normal mode operations in the form of real-time EDUs and Rate Buffered Data. The message structure and contents for the housekeeping return link data and the forward link data are not affected by the contingency mode (other than different data rates). Whether the contact is via a TDRSS Ground Terminal or via a contingency site ground terminal, EDOS transfers CODA Reports during the contact and a SCS Summary Report upon completion of the spacecraft contact session. At the end of the session, EDOS transmits the Rate Buffered data. The WOTS, located at Wallops Island, Virginia provides S-band emergency support for TDRSS compatible satellites. The WOTS is managed by the GSFC Suborbital Projects and Operations Directorate (Code 800). Contingency operations will also use the S-band sites at Alaska & Norway. Test Objectives:This test will ensure that the EOC can conduct commanding and telemetry processing operations with the Wallops Orbital Tracking System (WOTS) sites at each rate and format supported by that site. The S-band contingency sites at Alaska and Norway will also be tested. Specifically, this Confidence test will verify:+ the ability of the EOC to command the EOS spacecraft via the contingency configurations.+ the ability to schedule contingency configurations in a real-time contingency basis.+ the ability to execute real-time commands, and stored processor commands at all valid data rates within contingency mode + the ability to receive telemetry at all valid rates while in contingency mode Test to ensure the following communication characteristics: WOTS Return Link Requirements: Frequency: S-Band Data Type: VC1, VC3. Real-time housekeeping data is modulated on the carrier and the subcarrier. Total Bit Rate: Subcarrier: 16 Kbps, Carrier 16 or 512 Kbps. WOTS Uplink Requirements: Frequency: S-Band Data Type: VC0. Total Bit Rate: 2 Kbps.	AM1-0050#B AM1-0070#B AM1-0090#B EOC-2535#B EOC-4005#B EOC-4200#B EOC-5030#B EOSD0015#B NI-0210#B NI-0220#B NI-0230#B

	Data Delivery: Real time	
V2.0-EGS-03	AM-1 Mission Daily Operations Confidence Test Perform all of the normal daily operations of the EGS in support of the AM-1 Mission. This includes exercising the real time command and control of the spacecraft in the EOC, while simultaneously conducting mission planning ans scheduling processing for future activities and spacecraft analysis processing on history data. Test Objectives: The objective of this test is to perform all of the normal daily operations of the EGS in support of the AM-1 Mission. This includes exercising the real time command and control of the spacecraft in the EOC, while simultaneously conducting mission planning ans scheduling processing for future activities and spacecraft analysis processing on history data. At the DAACs, Level 0 data are received from EDOS, and ancillary data are transferred across DAACs and from ADCs and other sources. Science data production and archiving processing is performed. Product delivery to instrument teams is performed and the IMS is queried from multiple sources and ad hoc deliveries of data to users are performed. This test is the final step in the EOSDIS Mission Certification process for the AM-1 mission.	
V2.0-EGS-05	ECS - Landsat 7 Interoperability Confidence Test The objectives of this test are to: 1. Verify the ability of the ECS to interface with the LPS and the IAS to transfer Level 0R data using Level 0R test data, 2. Verify the ability of the ECS to interface with the LPS and the IAS to transfer Level 0R inventory metadata using test data, 3. Verify the ability of the ECS to interface with the LPS and the IAS to transfer Level 0R browse data using test data, and 4. Verify the ability of the ECS to interface with the MMO to exchange system-status messages and metadata. Only the functionalities between the EDC DAAC and the LPS will be tested for ECS Release A. Testing of the ECS-IAS, ECS -MMO, ECS-MOC, ECS-IGS, and other Landsat	LAND-0015#B LAND-0020#B LAND-0050#B LAND-0060#B LAND-0070#B LAND-0085#B LAND-0090#B LAND-0100#B LAND-0110#B LAND-0115#B LAND-0120#B LAND-0125#B LAND-0130#B LAND-0140#B LAND-0150#B LAND-0160#B LAND-0170#B

	7 functionalities are to be deferred until ECS Release B. Before this set of tests is conducted, the interfaces specified in ICT 8 (ECS to Landsat 7 Interface Confidence Test) must be tested and passed.	LAND-0180#B LAND-0185#B LAND-0201#B LAND-0210#B LAND-0240#B
V2.0-EGS-06	EGS - ASTER Instrument Operations Confidence Test The ASTER Instrument Confidence Test will simulate a ôDay in the life of ASTERö Operations. Accordingly, there will be a series of planned events for ASTER, and this plan will be modified to accommodate late changes. The modification will be made by the ASTER GDS, passed to the EOC, integrated into the plan, and be sent to ASTER via EDOS and EBnet. Test Objectives: Ensure ASTER GDS can operate ASTER through EOC. The ASTER GDS will submit baseline activity profiles, ad hoc activities, realtime commanding, and other ICC functions to EOC and the output from EOC will be checked to ensure EOC accurately generate the supporting command loads and ground scripts.	4.1.4.1.a 4.1.4.1.b 4.1.4.1.c 4.1.4.1.d 4.1.4.1.e 4.1.4.11 4.1.4.13 4.1.4.15 4.1.4.2.a 4.1.4.2.c 4.1.4.3 4.1.4.5 4.1.4.6 4.1.4.7 4.1.4.8.A 4.2.4.1 4.2.4.4 4.2.4.5 4.2.4.6 ASTER-0050#B ASTER-0060#B ASTER-0200#B ASTER-0210#B ASTER-0220#B ASTER-0230#B ASTER-0240#B ASTER-0250#B ASTER-0260#B ASTER-0300#B ASTER-0310#B ASTER-0340#B ASTER-0350#B ASTER-0410#B ASTER-0520#B ASTER-0530#B ASTER-0540#B ASTER-0550#B ASTER-0570#B ASTER-0580#B

		ASTER-0590#B
		ASTER-0730#B
		ASTER-0740#B
		ASTER-1060#B

V2.0-EGS-07	Security Confidence Test
	
	The objectives of this test are to verify the security functions of the EGS. These functions include:
	  + user access to secure data,
	  + the ability to prevent deliberate or unintentional corruption of data,
	  + virus detection,
	  + audit trailing,
	  + the systems response to security compromises,
	  + recovery from security violations, and
	  + security safeguards.
		ASTER-0890#B
		ASTER-0895#B
		EOSD2430#B
		EOSD2440#B
		EOSD2510#B
		EOSD2550#B
		EOSD2990#B
		EOSD3000#B
		EOSD3200#B
		EOSD3220#B
		EOSD3710#B
		ESN-0650#B
		ESN-1365#B
		ESN-1380#B
		ESN-1400#B
		ESN-1430#B
		IMS-0060#B
		IMS-0230#B
		SMC-0350#B
		SMC-5305#B
		SMC-5320#B
		SMC-5325#B
		SMC-5330#B
		SMC-5335#B
		SMC-5340#B
		SMC-5345#B
		SMC-5350#B
		SMC-5355#B
		SMC-5365#B
		SMC-7300#B
		SMC-8880#B

V2.0-EGS-08	Tests the performance of normal daily operations of the EGS in support of the Meteor 3M Mission (SAGE III).	TBD
V2.0-EGS-09	Exercise all ASTER science data operations, interfaces and user data access in an operational, scenario driven environment.	TBD
V2.0-EGS-10	Verifies EGS end-to-end science operations in support of AM-1 Mission	TBD
V2.0-EGS-11	Verifies the end-to-end performance of the daily operations of EGS in support of AM-1 Mission	TBD
V2.0-EOC-	Telemetry Processing and Logging Confidence Test	EDOS-4.1.1.1#B

01		EDOS-4.1.1.3#B
	Test Package Description	EDOS-4.1.1.6#B
		EDOS-4.1.1.8#B
	Background Information:	EDOS-4.2.1.4#B
	The Telemetry Processing Service provides the capabilities	EDOS-4.2.1.6#B
	needed to ingest, decommutate, engineering unit (EU)	EDOS-4.2.1.7#B
	convert, and limit check housekeeping (H/K), health and	EDOS-4.6.1.2#B
	safety (H&S), and diagnostic/memory dump telemetry from	EDOS-4.6.1.5#B
	the EOS spacecraft (S/C) subsystems and on-board	EDOS-4.6.1.8#B
	instruments. The processing of diagnostic/memory dump	EOC-0040#B
	telemetry is covered in the EOC2, Command Processing	EOC-5010#B
	Confidence Test.	EOC-5012#B
		EOC-5015#B
	The telemetry data will be downlinked through a TDRSS S-	EOC-5030#B
	band Single Access (SSA), S-band Multiple Access (MA) or	EOC-5045#B
	Ku-band Single Access (KSA) service with a dual channel	EOC-5050#B
	interface. During normal operations, the H/K data is	EOC-5070#B
	recorded on the EOS AM-1 solid state recorders (SSRs) and	EOC-5080#B
	played back during a TDRSS KSA return service at 150	EOC-5090#B
	Mbps (75 Mbps/75 Mbps). Recorded H/K telemetry is also	EOC-5100#B
	played back at 256 kps using the SSA service for anomaly	EOC-5105#B
	investigations. The real-time H/K (16 kbps) and H&S (1	EOC-5110#B
	kbps), and diagnostic/dump (1 kbps, 16 kbps) telemetry will	EOC-5120#B
	be downlinked through a SSA or MA service. TDRSS	EOC-5180#B
	ground terminals (WSGT/STGT) forward the telemetry data	EOC-5190#B
	which is in Consultative Committee for Space Data Systems	EOC-5220#B
	(CCSDS) packets to EDOS in Channel Access Data Unit	EOC-5230#B
	(CADU) format via EBnet. Low-rate telemetry is forwarded	EOC-5240#B
	directly to the EDOS Level Zero Processing Facility (LZPF).	EOC-6060#B
	High-rate telemetry is first sent to the EDOS Ground Station	EOC-6070#B
	Interface Facilities (GSIF) and then transferred to the LZPF	EOC-6130#B
	at reduced rates.	EOC-6195#B
	EDOS receives telemetry in CADU format. It extracts the	
	CCSDS packets and Command Link Control Words	
	(CLCWs). The CCSDS telemetry packets are processed and	
	converted to EDOS Data Units (EDUs) based on the	
	Application Process Identifier (APID), the Virtual Channel	
	Identifier (VCID), and the replay flag. An EDU consists of	
	an EDOS Service Header (ESH) and a Path Service Data	
	Unit (SDU). The ESH contains the quality and accounting	
	data. The Path SDU is simply the Version-1 CCSDS packet.	
	The real-time Path Service EDUs are sent to the EOC via	
	EBnet using UDP, to specific multicast IP addresses	
	(operational and test) and UDP ports per mission as defined	

in the applicable Operations Agreement (OA). The recorded EDUs are transferred in rate-buffered data files via EBnet using KFTP. The KFTP interface details such as EOC User IDs, IP addresses, host names, and file directories are defined in the applicable OA. Customer Operations Data Accounting (CODA) Report (which includes a Ground Message Header) is also sent to the EOC via EBnet using UDP. The CODA Report describes the operational activities of EDOS per S/C, this includes summaries of quality and accounting information (e.g., status of EDOS return and forward links, and VCDU service; and SCS statistics), but no information about Operations Management data is provided.

Upon receiving real-time telemetry, the Telemetry Processing Service decommutates the contents of the packets, performing the necessary EU conversions and parameter derivations. Various forms of limit checking are performed on the telemetry parameters, including boundary limit checking on analog parameters, and delta limit checking (examining the difference between successive parameter samples). For each parameter being checked for boundary limits, the Telemetry Processing Service uses one of several limit sets, in which each limit set consists of definition for one or more upper and lower boundaries for the parameter (e.g., red high/low and yellow high/low limit sets.) All parameters, along with associated limits, quality, and event information, are made available to the operator via the FOS User Interface Service.

Eventually, the telemetry data, and related event and configuration data are sent to the FOS DMS for temporary storage. The FOS DMS maintains the data files for a user configurable number of days, then the data is sent to the Science Data Processing Segment (SDPS) for permanent archival. The data remains at the FOS DMS for minimum of seven days, but the data may be removed after seven days if confirmation of successful storage is received from the SDPS Data Server. FOS DMS also provides access to the Operational Database (ODB).

Test Objectives:

The objectives of the test are to:

	+ Verify that EOC can ingest and process the following types of telemetry packets from the ETS, SSIM, or AM-1 S/C at the specified data rates:
	
	    1. Real-time instrument and S/C bus H/K telemetry (16 kbps)
	
	    2. Real-time instrument and S/C bus H&S telemetry (1 kbps)
	
	    3. Recorded instrument and S/C bus H/K telemetry (256 kbps, 150 Mbps [ETS HRS and AM-1 S/C only]
	
	    4. Command/Telemetry Interface Unit (CTIU) standby telemetry (1 kbps)
	+ Verify that the EOC can ingest and process real-time data (e.g., two 16 kbps data streams) sent simultaneously.
	+ Verify that all telemetry types can be decommutated and the results displayed in soft copy and hardcopy form.
	+ Verify proper EU conversion, limit and alarm check processing, and derived parameter generation.
	+ Verify that when any critical telemetry parameter limit is exceeded, the violations are reported and any related alarm mechanisms respond properly.
	+ Verify proper checking of context dependency and discrete state values of telemetry parameters.
	+ Verify the merging of R/T and recorded telemetry to create a complete hourly file that is archived at the FOS DMS.
	+ Verify that the EOC can store and retrieve telemetry data from the temporary (FOS DMS) and permanent (SDPS) archive sources for reuse.	

V2.0-EOC-02	EOC2 Command Processing Confidence Test Planning and scheduling activities produce the detailed activity schedule that is used for command generation. An integrated schedule of activities for instruments and spacecraft subsystems is produced, and the ground scripts and command loads necessary to implement the scheduled activities are generated. FOS collects and validates the commands, software memory loads, table loads and instrument memory loads necessary to implement the instrument and spacecraft scheduled activities. The command data is transmitted to EDOS for uplink to the spacecraft during each real-time contact. Command requests can be received from the ISTs in real-time by the operational staff or as preplanned command groups generated by the Command Management Service. Command execution on-board the spacecraft is verified via returned telemetry.	EDOS-4.1.1.2#B EDOS-4.1.1.4#B EDOS-4.2.1.5#B EDOS-4.6.1.3#B EOC-0040#B EOC-3080#B EOC-3238#B EOC-4008#B EOC-4010#B EOC-4015#B EOC-4018#B EOC-4020#B EOC-4100#B EOC-4120#B EOC-4125#B EOC-4130#B EOC-4160#B EOC-4200#B

		EOC-5010#B
	FOS maintains the current spacecraft memory image and performs memory dump compare operations, as requested.	EOC-5130#B
		EOC-6150#B
		EOC-6160#B
	Exhibit EOC2-1 illustrates the paths and associated rates for uplink from EOC to the EOS AM-1 spacecraft [based on ref 16 page 2000-3]. The three path rates from TDRS to EOS AM-1 will be verified in this test, the emergency path via GN/WOTS will be verified in test EGS2.	EOC-8130#B
		EOC-9080#B
		FOS-1130#B
	Test Objectives: The command processing confidence test will: + perform real-time commanding and load uplinks at all rates and formats to the prime and back-up Command and Telemetry Interface Units(CTIU) + verify proper implementation of CCSDS commanding protocols, and inhibition of critical and hazardous commanding + verify ability to conduct Onboard Computer (OBC) load, dump, and compare sequences.	
	Test Configuration: Exhibit EOC2-2 illustrates the Command Processing Test configuration with the ETS MPS being used to simulate EDOS and the spacecraft. The initial execution of EOC2 will utilize the simulator located at GSFC building 32. Exhibit EOC2-3 illustrates the next test configuration when EDOS is available. The ETS MPS will be used to simulate the spacecraft. Exhibit EOC2-4 illustrates the final test configuration when the TDRS system will be used along with the RFSOC and SSIM for the highest level of testing fidelity before the actual s/c is available.	
V2.0-EOC-03	Planning and Scheduling Confidence Test	AM1-0270#B
		EOC-0030#B
	The objective of this test is to verify that the EOC can produce an integrated schedule of activities for instruments and spacecraft subsystems, and generate the ground scripts and command loads necessary to implement the scheduled activities. The test will verify that the EOC can perform critical functions during the following phases of the planning and scheduling process:	EOC-1005#B
		EOC-2010#B
		EOC-2020#B
		EOC-2030#B
		EOC-2070#B
		EOC-2160#B
		EOC-2170#B
		EOC-2180#B
	- Long Term Planning	EOC-2190#B
	- Initial Scheduling	EOC-2200#B
	- Final Scheduling	
	- Command Management	EOC-2210#B

		EOC-2220#B
		EOC-2240#B
		EOC-2250#B
		EOC-2260#B
		EOC-2270#B
		EOC-2272#B
		EOC-2280#B
		EOC-2290#B
		EOC-2300#B
		EOC-2310#B
		EOC-2320#B
		EOC-2350#B
		EOC-2370#B
		EOC-2400#B
		EOC-2405#B
		EOC-2410#B
		EOC-2420#B
		EOC-2460#B
		EOC-2480#B
		EOC-2482#B
		EOC-2490#B
		EOC-2510#B
		EOC-2520#B
		EOC-2530#B
		EOC-2540#B
		EOC-2550#B
		EOC-2555#B
		EOC-2570#B
		EOC-2590#B
		EOC-2620#B
		EOC-3015#B
		EOC-3017#B
		EOC-3020#B
		EOC-3024#B
		EOC-3030#B
		EOC-3050#B
		EOC-3070#B
		EOC-3086#B
		EOC-3090#B
		EOC-3160#B
		EOC-3200#B
		EOC-3210#B
		EOC-3225#B
		EOC-3226#B
		EOC-3240#B

		EOC-4010#B
		EOSD1520#B
		EOSD1530#B
		ICC-2350#B
		ICC-2370#B
		ICC-2380#B
		ICC-3070#B
		ICC-3071#B
		ICC-3085#B
V2.0-EOC-04	Telemetry Analysis Confidence Test Test Package Description The Spacecraft (S/C) Analysis Service provides the capabilities needed for management of the on-board systems and for overall mission monitoring. It allows the EOC operators to monitor and manage the S/C system configurations and resources; perform real-time (R/T) and off-line analyses of S/C bus and instrument data to track performance and trends, and detect and isolate anomalies. These analysis functions are provided on a non-interference basis with R/T telemetry processing functions. Only a subset of the analysis functions is provided in real time through the use of a FOS User Interface (FUI) Quick Analysis and SSR Analysis tools. The Analysis Service evaluates the performance of the S/C subsystems and the status of instruments. Performance data are processed from spacecraft recorder and R/T housekeeping, and historical telemetry. The historical telemetry is retrieved from either short-term (FOS DMS) or long-term storage (SDPS). The EOC reports on the quality of the data used for the analysis, reports failures detected, and identifies marginal system operation. The EOC enables operators to analyze the performance of the power, command and data handling, thermal, communications, and guidance navigation and control subsystems. Test Objectives: The objectives of the test are: + Verify that the EOC can receive, process, and analyze S/C bus and instrument data to track performance and trends, and detect and isolate anomalies in real-time (R/T) or off-line.	EOC-5030#B EOC-5187#B EOC-5240#B EOC-6010#B EOC-6050#B EOC-6060#B EOC-6070#B EOC-6100#B EOC-6110#B EOC-6140#B EOC-6195#B EOC-7120#B

	+ Verify that system statistics (analog, discrete, and limit) are automatically generated at the EOC for telemetry parameters on daily, monthly, orbital, and mission-to-date time spans. + Verify that user-defined statistics (min-max-mean and standard deviation) for a specified time interval can be generated for a selected set of telemetry parameters. + Verify that the following types of requests can be performed: Quick Analysis, Replays, and Standing Orders. + Verify that the EOC can perform S/C Clock correlations to Coordinated Universal Time (UTC) and detect faults of Solid-State Recorder (SSR) playbacks. + Verify that the EOC can apply algorithms to S/C telemetry during off-line analysis. + Verify that carry-out files can be generated by the FOS Analysis Subsystem to contain the following: AM-1 S/C housekeeping data, AM-1 S/C health and safety data, and AM-1 diagnostic data, Network Control Center (NCC) operator data message (ODM) data, and EDOS Customer Operations and Data Accounting (CODA) message data. + Verify that S/C Analysis System (SAS) can receive carry-out files, SSR trash buffer files, and standard analysis products for specialized mission analyses which are not supported by the FOS Analysis Subsystem .+ Verify the storage and retrieval of carry-out files and other analysis products from the local EOC archive (short-term storage) and the GSFC DAAC (long-term storage). Verify that the analysis products can be provided in both hardcopy and softcopy form	
V2.0-EOC-05	EOC Resource Management Confidence Test The capability to manage and monitor the configuration of the EOC includes configuring the EOC resources for multi-mission support, facilitating operational failure recovery during real-time contacts, and managing the real-time interface with the NCC. The logical strings are controlled for telemetry monitoring and command- i.e., they enable FOS users to receive and monitor telemetry from one or more spacecraft and one or more instruments. In addition, requests from a Command Activity Controller for command authority and a Ground Controller for Ground Control authority are received. The privilege is granted to authenticated users, and ensures that only one person has command authority for a single spacecraft at any one time. Test Objectives:	EOC-8140#B EOC-8160#B EOC-8220#B EOC-8240#B EOC-9010#B EOC-9020#B EOC-9080#B EOC-9110#B EOSD3710#B FOS-0020#B FOS-0025#B

	The Resource Management Confidence Test will: + demonstrate the ability to shift displays between various rooms and pages + verify the ability to assign key functions such as command activity controller and ground controller to various workstations + verify the ability to protect privileged operations, such as commanding + configure and de-configure logical processing strings + demonstrate the ability to failover to redundant or standby elements. Test Configuration: Exhibit EOC5-1 illustrates the Resource Management Test configuration with ETS and SSIM. Since the functions of Resource Management are internal to the EOC the AM-1 spacecraft is not required for this test. Exhibit to be updated to reflect use of ETS, and to show Release A and Release B configurations.	
V2.0-ICT-01	DAAC - SCF Interface Confidence Test This test verifies: + The ability of the SCF and DAAC elements to transfer and respond to all message data types. + Proper implementation of bulk data transfers. + Error and exception handling for ftp and kftp transfers.	AM1-0230 AM1-0240 ICC-7060#B ICC-7070#B SCF-0060#B SCF-0070#B SCF-0080#B SCF-0090#B SCF-0100#B SCF-0110#B SCF-0120#B SCF-0130#B SCF-0140#B SCF-0150#B SCF-0160#B SCF-0170#B SCF-0180#B SCF-0190#B SCF-0200#B SCF-0210#B SCF-0220#B SCF-0230#B SCF-0240#B SCF-0250#B SCF-0260#B

		SCF-0270#B
		SCF-0280#B
		SCF-0290#B
		SCF-0300#B
		SCF-0310#B
		SCF-0320#B
		SCF-0330#B
		SCF-0340#B
		SCF-0350#B
		SCF-0360#B
		SCF-0370#B
		SCF-0380#B
		SCF-0390#B
V2.0-ICT-03	EDOS (LZPF) To LaRC/GSFC DAAC Interface Test EDOS will interface with several DAACs that will receive science data and supporting data types from one or several instruments. Certain DAACs will interface with EDOS to receive mission data to be used as input in the generation of data products, while other DAACs will interface with each other to receive data products as the input for science data processing. The ECS SDPS elements at the DAACs will interface with EDOS as required to receive Production Data Sets (PDSs) which serve as input to Level 1-4 science data processing. The GSFC DAAC will receive ASTER and MODIS data from EDOS. The LaRC DAAC will receive CERES, MISR and MOPITT data. EDOS will provide these DAACs with PDSs and Expedited Data Sets (EDSs), Non-Science PDS data and Operations Management Data (OMD). The DAACs will provide DAAC to EDOS Data Sets (DEDS) and OMD data to EDOS. Test Objectives - To verify EDSs can be transferred from EDOS to the DAAC - To verify PDSs can be transferred from EDOS to the DAAC - To verify data on physical media from EDOS can be read by the DAAC - To verify that EDOS can receive Service Requests from the DAACs - To verify that the DAAC can receive Non-Science PDS	4.1.2.1.a 4.1.2.1.b 4.1.2.1.c 4.1.2.1.d 4.1.2.1.e 4.1.2.10.b 4.1.2.10.d 4.1.2.11 4.1.2.12 4.1.2.13 4.1.2.14 4.1.2.2.a 4.1.2.2.b 4.1.2.3(1261) 4.1.2.3(719) 4.1.2.6(989) 4.1.2.7.a 4.1.2.7.d 4.1.2.7.e 4.1.2.7.f 4.1.2.7.g 4.1.2.8.a 4.1.2.8.d 4.1.3.1.a 4.1.3.1.b 4.1.3.1.c 4.1.3.1.f 4.1.3.10.b 4.1.3.10.d 4.1.3.11 4.1.3.12 4.1.3.13

	data	4.1.3.14
		4.1.3.2.a
		4.1.3.2.b
		4.1.3.3(725)
		4.1.3.6(726)
		4.1.3.7.a
		4.1.3.7.d
		4.1.3.7.e
		4.1.3.7.g
		4.1.3.7.h
		4.1.3.8.b
		4.1.3.8.d
		4.1.3.9
		4.2.1.1
		4.2.2.1
		4.2.2.2
		4.2.2.4
		4.2.2.5.a
		4.2.2.5.b
		4.2.3.1
		4.2.3.5.a
		4.2.3.5.b
		4.2.3.6.a
		4.2.3.6.b
		4.3.2.1
		4.3.2.2
		4.3.2.4
		4.3.3.1
		4.3.3.2
		4.3.3.4
		4.4.1.1(1265)
		4.4.1.2
		4.4.1.8
		4.4.1.9
		4.6.1.1
		4.6.1.10
		4.6.1.11
		4.6.1.6
		4.6.1.7
		4.6.1.9
		EDOS-4.1.2.1#B
		EDOS-4.1.2.3#B
		EDOS-4.1.2.7#B
		EDOS-4.1.3.1#B
		EDOS-4.1.3.3#B

		EDOS-4.1.3.7#B
		EDOS-4.6.1.1#B
V2.0-ICT-04	DAAC - ADC Interface Confidence Test The objectives of this test are to: a. Verify that the ECS user has access to NESDIS/SAA (one way interoperability for Release A) to identify, browse and order data located at SAA. b. Verify that the ECS user has capability to search and identify data located at NOAA Data Centers. c. Verify that the ECS has the capability to ingest NOAA ancillary data for the EOS standard product generation.	DADS0145#B
		IMS-0380#B
		IMS-0600#B
		IMS-0620#B
		IMS-0780#B
		IMS-0860#B
		IMS-0870#B
		IMS-0880#B
		IMS-1290#B
		IMS-1310#B
		IMS-1350#B
		NOAA0010#B
		NOAA0020#B
		NOAA0030#B
		NOAA0100#B
		NOAA0110
		NOAA0140#B
		NOAA0150
		NOAA0200
		NOAA0210#B
		NOAA0220#B
		NOAA0240
		NOAA0250#B
		NOAA0260#B
		NOAA0270
		NOAA0280
		NOAA0290#B
		NOAA0300#B
		NOAA0310
		NOAA0320
		NOAA0330#B
		NOAA0340#B
		NOAA0350
		NOAA0400
		NOAA0410#B
		NOAA0420
		NOAA0430#B
		NOAA0440#B
		NOAA0450
		NOAA0510#B
		NOAA0560#B
		NOAA0600#B
		NOAA0710#B

		NOAA0800#B
V2.0-ICT-05	ECS - GSFC DAAC Interface Confidence Test The objectives of this test are to: a. Verify that the NMC FNL, MRF, and ETA data sets can be transferred from the DAO/DAS Data Link Server (larry) and ingested to ECS GSFC DAAC. b. Verify that the NMC FNL, MRF, and ETA data sets can be transferred from the ECS GSFC DAAC to ECS LaRC DAAC.	EOSD1710#B EOSD5000#B NOAA0710#B
V2.0-ICT-08	ECS - Landsat 7 Interface Confidence Test The objectives of these tests are to: 1. Verify the ECS interface with the Landsat 7 processing system (LPS), which includes FDDI and router connections, and Landsat 7 data transmission to and from EDC DAAC 2. Verify the ability of the ECS to interface with the LPS to transfer messages, such as data availability notices and acknowledgment messages 3. Verify the ability of the ECS to interface with the LPS to transfer simulated test data 4. Verify the ability of the ECS to interface with the Landsat 7 IAS, MMO, and MOC to transfer system-status messages and metadata 5. Verify the ability of the Landsat 7 system to place information on the ECS Advertising Service and the ECS Document Data Server Only the interface between the EDC DAAC and the LPS will be tested for ECS Release A. Testing of the ECS-IAS, ECS - MMO, ECS-MOC, ECS-IGS, and other Landsat 7 interfaces are to be deferred until ECS Release B.	LAND-0015#B LAND-0020#B LAND-0030#B LAND-0040#B LAND-0050#B LAND-0060#B LAND-0070#B LAND-0080#B LAND-0085#B LAND-0090#B LAND-0100#B LAND-0110#B LAND-0115#B LAND-0120#B LAND-0125#B LAND-0130#B LAND-0140#B LAND-0150#B LAND-0160#B LAND-0170#B LAND-0185#B LAND-0201#B LAND-0210#B LAND-0220#B LAND-0230#B LAND-0240#B
V2.0-ICT-09	EOC - NCC Interface Confidence Test This test verifies requirements associated with the EOC - NCC interface. The objectives of this test are the following: - to verify the EOC - NCC schedule message interface - to verify the EOC - NCC real-time message interface	EOC-2400#B EOC-2405#B EOC-2410#B EOC-2420#B EOC-4060#B EOC-5030#B EOC-8100#B EOSD1520#B

		EOSD1530#B
V2.0-ICT-10	EOC - FDF Interface Confidence Test The objective of this test is to verify that the ECS can receive required orbit, attitude and mission planning aid data for the AM-1 mission from the FDF and provide orbit and attitude telemetry subsets to FDF for refinement and anomaly investigation. FDF support for AM-1 and the EOC will be provided under a new operations concept that moves most FDF computations into the EOC on a set of FDF dedicated work-stations. The TDRSS On-board Navigation System (TONS) Ground Support System (TGSS) will also reside on the FDF workstations in the EOC. This concept is still being defined. Currently, the FDF will deliver 53 different products to the EOC via four different mechanisms: + FTP transfer, + LAN transfer between the FDF workstations and EOC elements supported by the features provided by the EOC in the Instrument Support Toolkit (IST), + TONS Ground Support System (TGSS), + Hard copy FAX The EOC will provide 10 different data types to the FDF via three different mechanisms:+ FTP transfer, + LAN transfer between the FDF workstations and EOC elements supported by the features provided by the EOC in the Instrument Support Toolkit (IST), + Hard copy FAX FDF - GSFC DAAC Interface (TBS) The functions supported by this interface are: + Real time attitude determination	EOC-5185#B EOSD1502#B EOSD1505#B EOSD1510#B

	+ Non-real time attitude determination and attitude sensor calibration
	+ Mission Planning and Scheduling
	+ TDRSS On-board Navigation System (TONS) monitoring and support
	+ Maneuver Support
V2.0-ICT-11	EDOS - AOS Interface Confidence Test

Ensure EDOS receives ASTER instrument data from the spacecraft via SN, demultiplexes the information, and delivers the information (at nominal and maximum rates) from the EDOS.

Responsibilities:

EDOS provides capabilities for return link data capture, data handling, data distribution, archival data storage, and forward link data handling and interfaces with the ASTER Operations Segment (AOS) Instrument Control Center (ICC) and the ASTER SDPS.

The ASTER ICC provides distributed operations planning and scheduling, generation of instrument command mnemonics, instrument performance monitoring and health and safety analysis, and troubleshooting.

The ASTER SDPS interfaces with EDOS as required to receive the PDS Physical Media Unit Delivery Record, and PDSs which serve as input to the generation of ASTER Science data products.

Return Link:

The EDOS return link processing service receives and captures EOS spacecraft return link data transferred from the SN, performs processing for CCSDS communication services protocols, and transfers real time and house keeping playback telemetry data to the ASTER via EBnet.

EDOS sends the ASTER ICC the CODA Reports, SCS

EDOS sends ASTER instrument data packaged in Production Data Sets to ASTER SDPS on removable physical storage media.

Expedited Data Sets (EDS) are sent electronically to the Goddard DAAC by EDOS while Production Data Sets are sent to the ASTER GDS via removable physical storage media. The Goddard DAAC make the EDSs available to the ASTER SDPS.

Data quality and accounting information and processing status information are provided with the products to the ASTER GDS.

EDOS Archived PDSs are sent to the ASTER SDPS, on request via removable physical storage media.

Test Objectives:

Ensure EDOS receives ASTER instrument data from the spacecraft via SN, demultiplexes the information, and delivers the information (at nominal and maximum rates) from the EDOS as follows :

Goddard DAAC	EDSs
	Mission Test Data
ASTER AOS (ICC)	CODA (Rel. V3)
	SCS Summary Reports (Rel. V3)
	Real Time Path Service EDUs (Rel. V2)
	Rate Buffered Path Service EDUs (Rel. V2)
	Rate Buffered Path Service EDUs - Contingency {Tape}
	Mission Test Data
	Operation Management Test Data
ASTER SDPS {Tape}	ASTER Instrument Data (PDS) -
	Archived PDS {Tape}
	Mission Test Data
	Operation Management Test Data
	Physical Media Unit Delivery Record

	Insure the ability for EDOS to receive the following information (at nominal and maximum rates) from: ASTER SDPS Physical Media Unit Delivery Letter receipt acknowledgment New Rate Buffered, PDS & EDS File Size Requests Additionally, the following failure modes will be tested: + FTP transmission failures, where the FTP protocol will retransmit the data/message as the level one message accountability. + Insure that EDOS stores the data when a communication outage occurs. + When communications are reestablished insure EDOS first processes/transmits the Real-time Path Service EDUs and then the Rate Buffered Path Service EDUs.	
V2.0-ICT-12	DAAC - ASTER GDS Interface Confidence Test The ASTER GDS and ECS combine to provide ground support for mission operations and science data processing for the ASTER instrument on board the EOS AM-1 spacecraft. Ground support includes the following: spacecraft and instrument mission operations (planning, scheduling, control, monitoring, and analysis); science data processing, distribution, and archival; and ground systems communication and management. Unless otherwise noted, elements that support the ECS ASTER GDS interface are located at the Earth Resources Observation System (EROS) Data Center (EDC) DAAC in Sioux Falls, South Dakota. Test Objectives: + Verify interfaces between ECS and the ASTER GDS. + Verify data transfer protocols between ECS and the ASTER GDS. + Verify interoperability between ECS and the ASTER GDS.	ASTER-0010 ASTER-0020 ASTER-0030 ASTER-0100 ASTER-0110 ASTER-0120 ASTER-0130 ASTER-0700 ASTER-0760 ASTER-0770 ASTER-0800 ASTER-0805 ASTER-0810 ASTER-0815 ASTER-0820 ASTER-0825 ASTER-0830 ASTER-0835 ASTER-0840 ASTER-0845 ASTER-0850 ASTER-0855 ASTER-0860 ASTER-0865

		ASTER-0870
		ASTER-0875
		ASTER-0880
		ASTER-0885
		ASTER-0890
		ASTER-0895
		ASTER-0900
		ASTER-0905
		ASTER-0910
		ASTER-0915
		ASTER-0920
		ASTER-0925
		ASTER-0930
		ASTER-0935
		ASTER-0940
		ASTER-0945
		ASTER-0950
		ASTER-0955
		ASTER-0960
		ASTER-0965
		ASTER-1030
		ASTER-1045
		ASTER-1060
		ASTER-1065
		ASTER-2000
		ASTER-2060
		ASTER-2080
		ASTER-4000
		ASTER-4030
		ASTER-4060
		ASTER-4080
		ASTER-5000
		ASTER-5010

V2.0-ICT-13	EOC - ICC/IST Interface Confidence Test
	
	The IST is a subset of the Flight Operations Segment (FOS) software developed to enable the Instrument Operations Teams (IOTs) to conduct the following broad functions:+
	  + Instrument activity planning and scheduling,+
	  + Instrument commanding, +
	  + Instrument telemetry monitoring and analysis,+
	  + Update instrumentÆs software,+
	  + Receive image (micro-processor memory dump) of instrumentÆs software.
		EOC-2230#B
		EOC-2240#B
		EOC-2250#B
		EOC-2260#B
		EOC-2270#B
		EOC-2272#B
		EOC-2290#B
		EOC-2350#B
		EOC-2480#B
		EOC-2540#B
		EOC-2620#B
		EOC-3020#B

	Interfaces with ASTER are contained in ICT14 EOC-ASTER GDS Interface Confidence Test and ICT11 EDOS-ASTER GDS Interface Confidence Test and will not be tested within this confidence test. Many of the functions and tools provided by the IST are also common to the EOS Operations Center (EOC). The general architecture of the IST is a set of tools interfacing to the users through a corresponding set of Graphic User Interfaces (GUIs). The GUIs provide the user interface to functions provided locally and functions provided in client-server mode by the FOS in the EOC.	EOC-3030#B EOC-3200#B EOC-3225#B EOC-3226#B EOC-4015#B EOC-4166#B EOC-4168#B EOC-4210#B EOC-6020#B EOC-7015#B EOSD1500#B ICC-0010#B ICC-0020#B ICC-0030#B ICC-0055#B ICC-0070#B ICC-1130#B ICC-2010#B ICC-2015#B ICC-2050#B ICC-2052#B ICC-2060#B ICC-2110#B ICC-2115#B ICC-2140#B ICC-2150#B ICC-2190#B ICC-2210#B ICC-2220#B ICC-2230#B ICC-2250#B ICC-2270#B ICC-2280#B ICC-2290#B ICC-2300#B ICC-2350#B ICC-2370#B ICC-2380#B ICC-2390#B ICC-2400#B ICC-3010#B ICC-3020#B ICC-3040#B ICC-3050#B ICC-3060#B

		ICC-3070#B
		ICC-3071#B
		ICC-3085#B
		ICC-3090#B
		ICC-3100#B
		ICC-3110#B
		ICC-3210#B
		ICC-3230#B
		ICC-3270#B
		ICC-3370#B
		ICC-4020#B
		ICC-4045#B
		ICC-4050#B
		ICC-4060#B
		ICC-4070#B
		ICC-4090#B
		ICC-4095#B
		ICC-4100#B
		ICC-4110#B
		ICC-4120#B
		ICC-4130#B
		ICC-4150#B
		ICC-4170#B
		ICC-4410#B
		ICC-4420#B
		ICC-4440#B
		ICC-4450#B
		ICC-4460#B
		ICC-4470#B
		ICC-4480#B
		ICC-4490#B
		ICC-4500#B
		ICC-4510#B
		ICC-4540#B
		ICC-4545#B
		ICC-4560#B
		ICC-4570#B
		ICC-4580#B
		ICC-4590#B
		ICC-4600#B
		ICC-4710#B
		ICC-4720#B
		ICC-4730#B
		ICC-4740#B
		ICC-4760#B

		ICC-4775#B
		ICC-4780#B
		ICC-4790#B
		ICC-6005#B
		ICC-6010#B
		ICC-6020#B
		ICC-6030#B
		ICC-6040#B
		ICC-6060#B
		ICC-6070#B
		ICC-6090#B
		ICC-6110#B
		ICC-6130#B
		ICC-6135#B
		ICC-6140#B
		ICC-6150#B
		ICC-6510#B
		ICC-6520#B
		ICC-6525#B
		ICC-6540#B
		ICC-6580#B
		ICC-6600#B
		ICC-8010#B
		ICC-8020#B
		ICC-8050#B
V2.0-ICT-14	EOC - ICC Interface Confidence Test Test Objectives: Exercise bulk data (mission data) flow and the ability to transfer and respond to all message data types. Error and exception handling will be exercised for custom protocols, but not for COTS/standard protocols supporting the interface. Specifically, for ASTER, + Ensure verification of users attempting to gain access to either EOSDIS or to ASTER GDS via the ASTER GDS to EOSDIS interface. + Verify the ability of the EOC to send updates to the EOC operations database to ASTER GDS.	ASTER-0050#B ASTER-0060#B ASTER-0200#B ASTER-0210#B ASTER-0220#B ASTER-0230#B ASTER-0240#B ASTER-0250#B ASTER-0260#B ASTER-0300#B ASTER-0310#B ASTER-0340#B ASTER-0350#B ASTER-0410#B ASTER-0520#B ASTER-0530#B ASTER-0540#B ASTER-0550#B ASTER-0570#B ASTER-0580#B

		ASTER-0590#B
		ASTER-0730#B
		ASTER-0740#B
		ASTER-1060#B
		FOS-0040#B
V2.0-ICT-15	SAGE III MOC - LaRC DAAC Interface Confidence Test The objective of this test is to verify the interface between the SAGE III MOC and the LaRC DAAC. The following is a summary of the test objectives: - Verify the SAGE III MOC can provide and the LaRC DAAC ECS can receive notification of data availability; - Verify the SAGE III MOC can send and the LaRC ECS DAAC can receive SAGE III Level 0 data/metadata, Level 0 ancillary data/metadata, and definitive orbit data/metadata; - Verify the SAGE III MOC can interface with the LaRC ECS DAAC and the LaRC ECS DAAC can interface with the SAGE III MOC using authorization and authentication protocol; - Verify the LaRC ECS DAAC can provide and the SAGE III MOC can receive acknowledgment of receipt of file transfers; - Verify the LaRC ECS DAAC capacity to support the data volumes; - Verify the error handling capability during the course of data exchange between the SAGE III MOC and the LaRC ECS DAAC.	SAGEM0010 SAGEM0010#B SAGEM0020 SAGEM0020#B SAGEM0030 SAGEM0030#B SAGEM0040 SAGEM0040#B SAGEM0050 SAGEM0050#B SAGEM0060 SAGEM0060#B SAGEM0070 SAGEM0070#B SAGEM1010 SAGEM1010#B SAGEM1020 SAGEM1020#B SAGEM2010 SAGEM2010#B

V2.0-SFQ-01	Data Ingest and Archive Confidence Test
	
	This test deals with the data ingest and archive functions of the ECS. The objectives of this test are:
	  + to verify that L0 data, both EDS and PDS, can be ingested from EDOS
	  + to verify that TRMM, NOAA, and ADC data sets can be ingested,
	  + to verify that ancillary data can be ingested from the SDPF, TSDIS, and the FDF,
	  + to verify the delivery of ingested data per standing orders,
	  + to verify fault detection, as it relates to data ingest and archive,
	  + to verify administration activities associated with the ingest and archive functionality, and
	  + to test the throughput of the ingest and archive processes.
		DADS0130#B
		DADS1472#B
		DADS2040#B
		DADS2270#B
		DADS2276#B
		DADS2300#B
		DADS2950#B
		EOSD0020#B
		EOSD1010#B
		EOSD1502#B
		EOSD1607#B
		EOSD3220#B
		EOSD3910#B
		ESN-0070#B
		ESN-0290#B
		ESN-0300#B
		ESN-0450#B

		ESN-0620#B
		ESN-0640#B
		ESN-0830#B
		ESN-0840#B
		ESN-0900#B
		ESN-0920#B
		ESN-1140#B
		ESN-1170#B
		ESN-1206#B
		ESN-1340#B
		ESN-1350#B
		IMS-0240#B
		IMS-1790#B
		SDPS0020#B
		SDPS0021#B
		SMC-0340#B
		SMC-3350#B
		SMC-3390#B
		SMC-3395#B
		SMC-4315#B
		SMC-4335#B

V2.0-SFQ-02	Science Data Production Confidence Test
	
	This test verifies requirements associated with the science data production functionality of the ECS. The objectives of this test are:
	  + to verify that the science operations team can plan, schedule, and execute data production runs (a production run which stresses system resources is scheduled and the results examined),
	  + verify the QA functionality as it relates to the data production environment,
	  + verify metadata updates,
	  + verify end user notification,
	  + verify emergency procedures, and
	  + verify priority processing.
		DADS1472#B
		DADS2000#B
		EOSD0720#B
		EOSD1010#B
		ESN-0070#B
		IMS-0350#B
		SCF-0200#B
		SCF-0210#B
		SCF-0220#B
		SCF-0230#B
		SCF-0240#B
		SCF-0250#B
		SMC-1345#B
		SMC-3335#B
		SMC-3340#B
		SMC-3345#B
		SMC-3350#B
		SMC-3385#B

V2.0-SFQ-03	Data Access and Transfer Confidence Test Test Objectives: The objective of this test is to demonstrate the overall capability of ECS to provide users with specific data as	DADS2370#B DADS2490 DADS2510 DADS2530#B DADS2580 ESN-0280#B

	requested from various spacecraft and instruments. Data from the AM-1, Landsat 7, SAGE III, and TRMM missions will be acquired via an ECS client accessed through a Personal Computer (PC) or XWindow Graphical User Interface (GUI) Workstation (WS). Data are accessed through the B0 Search and Order Tool (B0SOT), which interfaces with the B.0 data server infrastructure via the V0 gateway, and the JAVA Earth Science Tool (JEST). Data are supplied on various types of media (CD-ROM, 4MM tape, etc.). These tests are designed to access the services of the DAACs available for this release. Following successful access and product distribution, all results will be verified against the criteria selected prior to the start of test activities. This process involves several key steps, including + the identification of appropriate data sets through directory, guide and inventory searches + the ability to browse or visually sub-sample data sets for scientist and non-scientist users + the ability to specify exactly which data is desired, through identification of explicit parameters, formats, sensors, platforms, and/or geographic areas of data coverage. + the ability to request the order for the desired data to the ECS including standing and one time orders. + the ability to receive data from ECS via electronic and hard media means + the ability to receive Information Management System (IMS) information regarding outstanding and backlog data requests Support for a wide variety of users must also be facilitated. Users are categorized within two primary groups, each with different technical backgrounds, and three levels of user interaction support (expert, intermediate and novice).	ESN-0290#B ESN-0300#B ESN-1180#B IMS-0040#B IMS-0100 IMS-0130#B IMS-0160 IMS-0210#B IMS-0230#B IMS-0510#B IMS-1080#B IMS-1650#B IMS-1700#B SMC-1330#B SMC-3350#B
V2.0-SFQ-04	System Administration Confidence Test This test deals with the system administration functions within the ECS. This test does not necessarily have mission critical requirements associated with it, however, DAAC personnel feel that these functions need to be tested and verified to ensure that they can perform their duties within	EOSD2440#B EOSD2510#B EOSD2990#B EOSD3000#B EOSD4035#B ESN-0490#B ESN-0510#B

	the system. The objectives of this test are: 　　+ to verify administration type functionality, and 　　+ system monitoring functionality.	ESN-0610#B ESN-1380#B SMC-0350#B SMC-2505#B SMC-3305#B SMC-3370#B SMC-3375#B SMC-5350#B SMC-5355#B SMC-5365#B SMC-8880#B
V2.0-SFQ-05	V0 Interoperability Confidence Test Verify that ECS SDPS and EOSDIS V0 can exchange Directory, Inventory, and Guide information and conduct browse activities and exchanges of products to demonstrate interoperability. The objectives of this test are to: (1) Verify that the users of the ECS SDPS can make product requests based on directory, inventory, and guide searches from the EOSDIS V0 IMS. (2) Verify that EOSDIS V0 users will be able to make product requests based on directory, inventory, and guide searches from the ECS SDPS. Browse activities and product transfers will be conducted to demonstrate interoperability. Product order generation will be performed and verified for correctness. The following objectives will be confirmed when these tests are successfully executed. + ECS SDPS can access Directory information from the EOSDIS V0 IMS + ECS SDPS can access Inventory information from the EOSDIS V0 IMS + ECS SDPS can access Guide information from the EOSDIS V0 IMS + ECS SDPS can conduct Browse activities against the EOSDIS V0 IMS + ECS SDPS can order data products from the EOSDIS V0 IMS + EOSDIS V0 IMS can access Directory information from the ECS SDPS + EOSDIS V0 IMS can access Inventory information from	EOSD1695#B EOSD1740#B IMS-0625#B IMS-0915#B V0-0010#B V0-0020#B V0-0030#B V0-0040#B V0-0050#B V0-0060#B V0-0070#B V0-0080#B V0-0090#B V0-0100#B V0-0110#B V0-0120#B V0-0150#B V0-0160#B V0-0170#B V0-0180#B V0-0190#B V0-0200#B V0-0230#B V0-0240#B V0-0370#B V0-0380#B V0-0390#B

	the ECS SDPS + EOSDIS V0 IMS can access Guide information from the ECS SDPS + EOSDIS V0 IMS can conduct Browse activities against the ECS SDPS + EOSDIS V0 IMS can order data products from the ECS SDPS This set of tests will confirm that scientist and non-scientist users will be able to enter specific requests for images and other data. The test will also confirm that data orders are provided via both FTP and magnetic media. The test package execution includes both the ECS client accessing the V0 server and the V0 client accessing the ECS server via an Xwindows GUI on UNIX Workstations and the World Wide Web.	
V2.0-SFQ-06	Data Manipulation Confidence Test The objective of this Science Data Delivery confidence test is to verify capabilities provided by the ECS for users to manipulate EOS data and select subsets, subsamples and summary products. These capabilities are to be verified by nine test cases: a. Initial Data Manipulation b. Parametric Subsetting c. Temporal Subsetting d. Spatial Subsetting e. Spectral Subsetting f. Subsampling g. Summary Products h. Data Formatting and Transformation i. IMS Toolkit	DADS0590#B DADS0740#B DADS0930#B DADS1475#B DADS2200#B DADS2470#B IMS-0320#B IMS-0420#B IMS-0575#B IMS-0580#B IMS-0680#B IMS-0690#B IMS-0700#B IMS-0705#B IMS-0720#B IMS-0730#B IMS-0770#B IMS-0920#B IMS-1490#B IMS-1500#B IMS-1510#B IMS-1520#B IMS-1530#B IMS-1540#B IMS-1550#B IMS-1570#B IMS-1590#B

By Requirement ID

Requirement ID	Requirement Text	Confidence Test Package ID
4.1.1.1.a	EDOS shall interface with the EOC to transfer Operations Management Data.	V2.0-ICT-11
4.1.1.1.b	EDOS shall interface with the EOC to transfer Operations Management Test Data.	V2.0-ICT-11
4.1.1.15	EDOS shall provide the capability to receive SN Schedules from the EOC.	V2.0-ICT-11
4.1.1.16	EDOS shall provide the capability to receive EOSDIS Ground Station scheduling data from the EOC.	V2.0-ICT-11
4.1.1.17	EDOS shall provide the capability to transfer command echo blocks to the EOC.	V2.0-ICT-11
4.1.1.18	EDOS shall provide the capability to transfer all VCDUs with invalid VCDU-IDs received during an SCS to the EOC as a rate buffered data service.	V2.0-ICT-11
4.1.1.2.a	EDOS shall interface with the EOC to receive Command Data Blocks (CDBs).	V2.0-ICT-11
4.1.1.2.b	EDOS shall interface with the EOC to receive Command Test Blocks.	V2.0-ICT-11
4.1.1.2.c	EDOS shall interface with the EOC to receive Operations Management Data.	V2.0-ICT-11
4.1.2.1.a	EDOS shall interface with the Langley Research Center (LaRC) DAAC to transfer Operations Management Data.	V2.0-ICT-03
4.1.2.1.b	EDOS shall interface with the Langley Research Center (LaRC) DAAC to transfer Mission Test Data.	V2.0-ICT-03
4.1.2.1.c	EDOS shall interface with the Langley Research Center (LaRC) DAAC to transfer Operations Management Test Data.	V2.0-ICT-03
4.1.2.1.d	EDOS shall interface with the Langley Research Center (LaRC) DAAC to transfer PDSs.	V2.0-ICT-03
4.1.2.1.e	EDOS shall interface with the Langley Research Center (LaRC) DAAC to transfer EDSs.	V2.0-ICT-03
4.1.2.10.b	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide receipt for PDS/EDS Acceptance Notifications.	V2.0-ICT-03
4.1.2.10.d	EDOS shall conform to GOSIP protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide receipt	V2.0-ICT-03

	for service requests. (Applicable to SU#1 only.)	
4.1.2.11	EDOS shall provide the capability to ship archived PDSs on removable physical media to the LaRC DAAC upon request.	V2.0-ICT-03
4.1.2.12	EDOS shall provide the capability to accept DEDS on removable physical media from the LaRC DAAC.	V2.0-ICT-03
4.1.2.13	EDOS shall provide the capability to store DEDS received from the LaRC DAAC.	V2.0-ICT-03
4.1.2.14	EDOS shall provide the capability to transfer EDS Delivery Records as specified in Applicable Document 1 to the LaRC DAAC following the delivery of each EDS.	V2.0-ICT-03
4.1.2.2.a	EDOS shall interface with the LaRC DAAC to receive Operations Management Data.	V2.0-ICT-03
4.1.2.2.b	EDOS shall interface with the LaRC DAAC to receive Operations Management Test Data.	V2.0-ICT-03
4.1.2.3(1261)	The EDOS - EBnet interface shall provide the capability to support an aggregate data rate of 49 kbps for the exchange of operations management data.	V2.0-ICT-03
4.1.2.3(719)	EDOS shall provide the capability to transfer PDS Delivery Records as specified in Applicable Document 1 to the LaRC DAAC following the delivery of each PDS.	V2.0-ICT-03
4.1.2.6(989)	EDOS shall provide the capability to transfer Service Request Dispositions to the LaRC DAAC, as specified in Applicable Document 1. (Applicable to SU#1 only.)	V2.0-ICT-03
4.1.2.7.a	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide guaranteed data delivery for PDS Delivery Records.	V2.0-ICT-03
4.1.2.7.d	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4. and 5 for communications services to provide guaranteed data delivery for Service Request Dispositions. (Applicable to SU#1 only.)	V2.0-ICT-03
4.1.2.7.e	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide guaranteed data delivery for PDSs.	V2.0-ICT-03
4.1.2.7.f	EDOS shall conform to internet protocol standards as specified in Applicable Documents 2,	V2.0-ICT-03

	3, 4, and 5 for communication services to provide guaranteed delivery for EDSs.	
4.1.2.7.g	EDOS shall conform to internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communication services to provide guaranteed delivery for EDS Delivery Records.	V2.0-ICT-03
4.1.2.8.a	EDOS shall provide the capability to receive Operations Management data from the LaRC DAAC as specified in Applicable Document 1, including PDS/EDS Acceptance Notifications.	V2.0-ICT-03
4.1.2.8.d	EDOS shall provide the capability to receive Operations Management data from the LaRC DAAC as specified in Applicable Document 1, including Service Requests. (Applicable to SU#1 only.)	V2.0-ICT-03
4.1.3.1.a	EDOS shall interface with the GSFC DAAC to transfer Operations Management Data.	V2.0-ICT-03
4.1.3.1.b	EDOS shall interface with the GSFC DAAC to transfer Mission Test Data.	V2.0-ICT-03
4.1.3.1.c	EDOS shall interface with the GSFC DAAC to transfer Operations Management Test Data.	V2.0-ICT-03
4.1.3.1.f	EDOS shall interface with the GSFC DAAC to transfer Mission Data.	V2.0-ICT-03
4.1.3.10.b	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide receipt for PDS/EDS Acceptance Notifications.	V2.0-ICT-03
4.1.3.10.d	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide receipt for Service Requests. (Applicable to SU#1 only.)	V2.0-ICT-03
4.1.3.11	EDOS shall provide the capability to ship archived PDSs on removable physical media to the GSFC DAAC upon request.	V2.0-ICT-03
4.1.3.12	EDOS shall provide the capability to accept DEDS on removable physical media from the GSFC DAAC.	V2.0-ICT-03
4.1.3.13	EDOS shall provide the capability to store DEDS received from the GSFC DAAC.	V2.0-ICT-03
4.1.3.14	EDOS shall provide the capability to transfer EDS Delivery Records as specified in Applicable Document 1 to the GSFC DAAC following the delivery of each EDS.	V2.0-ICT-03

4.1.3.2.a	EDOS shall interface with the GSFC DAAC to receive Operations Management Data.	V2.0-ICT-03
4.1.3.2.b	EDOS shall interface with the GSFC DAAC to receive Operations Management Test Data.	V2.0-ICT-03
4.1.3.3(725)	EDOS shall provide the capability to transfer PDS Delivery Records as specified in Applicable Document 1 to the GSFC DAAC following the delivery of each PDS.	V2.0-ICT-03
4.1.3.6(726)	EDOS shall provide the capability to transfer Service Request Dispositions as specified in Applicable Document 1 to the GSFC DAAC. (Applicable to SU#1 only.)	V2.0-ICT-03
4.1.3.7.a	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide guaranteed data delivery for PDS Delivery Records.	V2.0-ICT-03
4.1.3.7.d	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide guaranteed data delivery for Service Request Dispositions. (Applicable to SU#1 only.)	V2.0-ICT-03
4.1.3.7.e	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide guaranteed data delivery for PDSs.	V2.0-ICT-03
4.1.3.7.g	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide guaranteed data delivery for EDSs.	V2.0-ICT-03
4.1.3.7.h	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2, 3, 4, and 5 for communications services to provide guaranteed data delivery for EDS Delivery Records.	V2.0-ICT-03
4.1.3.8.b	EDOS shall provide the capability to receive Operations Management data as specified in Applicable Document 1 from the GSFC DAAC including PDS/EDS Acceptance Notifications.	V2.0-ICT-03
4.1.3.8.d	EDOS shall provide the capability to receive Operations Management data as specified in Applicable Document 1 from the GSFC DAAC including including Service Requests. (Applicable to SU#1 only.)	V2.0-ICT-03
4.1.3.9	EDOS shall provide the capability to receive	V2.0-ICT-03

	Service Requests from the GSFC DAAC as specified in Applicable Document 1. (Applicable to SU#1 only.)	
4.1.4.1.a	EDOS shall interface with the ASTER ICC to transfer Operations Management Data.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.1.b	EDOS shall interface with the ASTER ICC to transfer Mission Test Data.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.1.c	EDOS shall interface with the ASTER ICC to transfer Operations Management Test Data.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.1.d	EDOS shall interface with the ASTER ICC to transfer Mission Data.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.1.e	EDOS shall interface with the ASTER ICC to transfer PDSs.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.11	EDOS shall provide the capability to receive Service Requests from the ASTER ICC as specified in Applicable Document 1. (Applicable to SU#1 only.)	V2.0-EGS-06 V2.0-ICT-11
4.1.4.13	EDOS shall provide the capability to transfer return link rate-buffered data to the ASTER ICC via the gateway to Japan. [EDOS generates rate-buffered data by concatenating an ESH with each applicable return link path SDU.]	V2.0-EGS-06 V2.0-ICT-11
4.1.4.15	EDOS shall provide the capability to send a PDS Physical Media Unit Delivery Letter to the ASTER ICC whenever an archived PDS is shipped to the ASTER ICC.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.2.a	EDOS shall interface with the ASTER ICC to receive Operations Management Data. (Applicable to SU#1 only.)	V2.0-EGS-06 V2.0-ICT-11
4.1.4.2.c	EDOS shall interface with the ASTER ICC to receive Operations Management Test Data. (Applicable to SU#1 only.)	V2.0-EGS-06 V2.0-ICT-11
4.1.4.3	EDOS shall provide the capability to transfer return link real-time Path Service EDUs to the ASTER ICC via the gateway to Japan. [EDOS generates EDUs by concatenating an ESH with each applicable return link path SDU].	V2.0-EGS-06 V2.0-ICT-11
4.1.4.5	EDOS shall provide the capability to transfer CODA reports as specified in Applicable Document 1 to the ASTER ICC.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.6	EDOS shall provide the capability to transfer SCS Summary Reports as specified in Applicable Document 1 to the ASTER ICC.	V2.0-EGS-06 V2.0-ICT-11
4.1.4.7	EDOS shall provide the capability to transfer	V2.0-EGS-06

	Service Request Dispositions as specified in Applicable Document 1 to the ASTER ICC. (Applicable to SU#1 only.)	V2.0-ICT-11
4.1.4.8.A	EDOS shall transfer real-time data to the ASTER ICC.	V2.0-EGS-06 V2.0-ICT-11
4.2.1.1	The EDOS - EBnet interface shall provide the capability to support the exchange of expedited and production data to be delivered to destinations.	V2.0-ICT-03
4.2.2.1	The EDOS-LaRC DAAC interface shall provide the capability to support the transfer of Operations Management data to the LaRC DAAC at a rate of up to 49 kbps.	V2.0-ICT-03
4.2.2.2	The EDOS - EBnet interface shall provide the capability to support an aggregate data rate of 68 Mbps for the exchange of expedited and production data to be delivered to destinations.	V2.0-ICT-03
4.2.2.4	The EDOS - EBnet interface shall provide the capability to support an aggregate data rate of 95 Mbps for the exchange of expedited and production data to be delivered to destinations to support SU#1.	V2.0-ICT-03
4.2.2.5.a	The EDOS-LaRC DAAC interface shall provide the capability to support the transfer of expedited data sets to the LaRC DAAC at a rate of up to 28 Mbps.	V2.0-ICT-03
4.2.2.5.b	The EDOS LaRC DAAC interface shall provide the capability to support the transfer of production data sets to the LaRC DAAC at a rate of 28 Mbps.	V2.0-ICT-03
4.2.3.1	The EDOS-GSFC DAAC interface shall provide the capability to support the transfer of Operations Management data to the GSFC DAAC at a rate of up to 49 Kbps.	V2.0-ICT-03
4.2.3.5.a	The EDOS-GSFC interface shall provide the capability to support the transfer of expedited data sets at a rate of up to 68 Mbps.	V2.0-ICT-03
4.2.3.5.b	The EDOS-GSFC interface shall provide the capability to support the transfer of production data sets at a rate of up to 68 Mbps.	V2.0-ICT-03
4.2.3.6.a	The EDOS-GSFC interface shall provide the capability to support the transfer of expedited data sets at a rate of up to 95 Mbps. (Applicable to SU#1 only.)	V2.0-ICT-03

4.2.3.6.b	The EDOS-GSFC interface shall provide the capability to support the transfer of production data sets at a rate of up to 95 Mbps. (Applicable to SU#1 only.)	V2.0-ICT-03
4.2.4.1	The EDOS-ASTER ICC interface shall provide the capability to support the transfer of Operations Management data to the ASTER ICC at an aggregate rate of up to 49 kbps.	V2.0-EGS-06 V2.0-ICT-11
4.2.4.4	The EDOS-ASTER interface shall provide the capability to support the transfer of real-time return link data sets at a rate of up to 70 kbps.	V2.0-EGS-06 V2.0-ICT-11
4.2.4.5	The EDOS-ASTER interface shall provide the capability to support the transfer of rate buffered return link data sets at a rate of up to 49 kbps.	V2.0-EGS-06 V2.0-ICT-11
4.2.4.6	The EDOS-ASTER ICC interface shall provide the capability to support the transfer of CODA messages to the ASTER ICC every 5 seconds.	V2.0-EGS-06 V2.0-ICT-11
4.3.2.1	The LaRC DAAC shall provide the capability to initiate transfer of the PDS/EDS Acceptance Notification to EDOS within a time period of 15 minutes plus an additional 15 minutes for each gigabyte of EDS data, after successful receipt of the PDS/EDS Delivery Record from EDOS.	V2.0-ICT-03
4.3.2.2	The LaRC DAAC shall provide the capability to initiate transfer of the PDS/EDS Acceptance Notification to EDOS within a time period of 15 minutes plus an additional 15 minutes for each gigabyte of PDS data, after successful receipt of the PDS/EDS Delivery Record from EDOS.	V2.0-ICT-03
4.3.2.4	The LaRC DAAC shall provide the capability to transfer Service Requests to EDOS as specified in Applicable Document 1 at a rate up to 49 kbps. (Applicable to SU#1 only.)	V2.0-ICT-03
4.3.3.1	The GSFC DAAC shall provide the capability to initiate transfer of the PDS/EDS Acceptance Notification to EDOS within a time period of 15 minutes plus an additional 15 minutes for each gigabyte of EDS data, after successful receipt of the PDS/EDS Delivery Record from EDOS.	V2.0-ICT-03
4.3.3.2	The GSFC DAAC shall provide the capability to initiate transfer of the PDS/EDS Acceptance Notification to EDOS within a time period of 15	V2.0-ICT-03

	minutes plus an additional 15 minutes for each gigabyte of PDS data, after successful receipt of the PDS/EDS Delivery Record from EDOS.	
4.3.3.4	The GSFC DAAC shall provide the capability to transfer Service Requests to EDOS as specified in Applicable Document 1 at a rate up to 49 kbps. (Applicable to SU#1 only.)	V2.0-ICT-03
4.3.4.3	The ASTER ICC shall provide the capability to transfer Service Requests to EDOS as specified in Applicable Document 1 at a rate up to 49 kbps. (Applicable to SU#1 only.)	V2.0-ICT-11
4.4.1.1(1265)	EDOS - EBnet interfaces shall provide the capability to support the protocols shown in Figure 4-1, as specified in Applicable Documents 1, 2, 3, 4, 5, 6, 12, 17, 18, and 19.	V2.0-ICT-03
4.4.1.2	EDOS - EBnet interfaces shall comply with a standard addressing convention for the IP stacks shown in Figure 4-1.	V2.0-ICT-03
4.4.1.8	EDOS - EBnet interfaces shall utilize the TCP-IP interface for real-time mission data delivery.	V2.0-ICT-03
4.4.1.9	EDOS - EBnet interfaces shall utilize the TCP-IP interface for operations management data delivery.	V2.0-ICT-03
4.6.1.1	EDOS shall conform to Internet protocol standards for communications services as specified in Applicable Documents 2, 3, 4, and 5.	V2.0-ICT-03
4.6.1.10	EDOS shall transfer EDSs using FTP.	V2.0-ICT-03
4.6.1.11	EDOS shall transfer PDS Physical Media Unit Delivery Records using FTP.	V2.0-ICT-03
4.6.1.2	EDOS shall transfer real-time return link data using UDP/ IP.	V2.0-ICT-11
4.6.1.3	EDOS shall receive real-time forward link data using UDP/ IP	V2.0-ICT-11
4.6.1.4	EDOS shall transfer command echo blocks using UDP/ IP.	V2.0-ICT-11
4.6.1.5	EDOS shall transfer CODA reports using UDP/ IP.	V2.0-ICT-11
4.6.1.6	EDOS shall transfer non-CODA Operations Management data using FTP.	V2.0-ICT-03 V2.0-ICT-11
4.6.1.7	EDOS shall receive Operations Management data using FTP.	V2.0-ICT-03 V2.0-ICT-11
4.6.1.8	EDOS shall transfer rate-buffered return link data using FTP.	V2.0-ICT-11
4.6.1.9	EDOS shall transfer PDSs using FTP.	V2.0-ICT-03

AM1-0020#B	The EOC shall have the capability to send (via EDOS/EBnet and the SN, GN, DSN, or WOTS) and the AM-1 spacecraft shall have the capability to receive spacecraft commands in CCSDS CLTUs (as defined in AM-1 ICD 106).	V2.0-EGS-02
AM1-0030#B	The EOC shall have the capability to send (via EDOS/EBnet and the SN, GN, DSN, or WOTS) and the AM-1 spacecraft shall have the capability to receive instrument commands in CCSDS CLTUs (as defined in AM-1 ICD 106).	V2.0-EGS-02
AM1-0050#B	The AM-1 spacecraft shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs containing CCSDS telemetry packets and CLCWs) real time AM-1 spacecraft and instrument housekeeping telemetry packets (as defined in AM-1 ICD 106) via EDOS/EBnet and the SN, GN, DSN, or WOTS interfaces.	V2.0-EGS-02
AM1-0070#B	The AM-1 spacecraft shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs containing CCSDS telemetry packets) recorded AM-1 spacecraft and instrument housekeeping telemetry packets (as defined in AM-1 ICD 106) via EDOS/EBnet and the SN, GN, DSN, or WOTS interfaces.	V2.0-EGS-02
AM1-0090#B	The AM-1 spacecraft shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs containing CCSDS telemetry packets and CLCWs) AM-1 SCC, CTIU, and instrument microprocessor memory dump telemetry packets (as defined in AM-1 ICD 106) via EDOS/EBnet and the SN, GN, DSN, or WOTS interfaces.	V2.0-EGS-02
AM1-0230	The IST toolkit shall have the capability to accept data from a science computing facility that supports PI/TL operations, which include the following data (at a minimum): a. instrument microprocessor memory loads. b. changes in the instrument parameters	V2.0-ICT-01

AM1-0240	The IST toolkit shall have the capability to provide data to a science computing facility that supports PI/TL instrument operations, which include the following data (at a minimum): a. Microprocessor memory dumps b. Instrument analysis results	V2.0-ICT-01
AM1-0270#B	The AM-1 SDVF shall have the capability to send and ECS shall have the capability to receive AM-1 SCC flight software updates.	V2.0-EOC-03
ASTER-0010	ECS and ASTER GDS shall conform to the IRD Between EOSDIS Core System and Science Computing Facilities with regard to the passing of data production software and calibration coefficients between the two systems in support of data production software development for standard ASTER data products.	V2.0-ICT-12
ASTER-0020	ASTER GDS shall have the capability to send and ECS (EDC DAAC) shall have the capability to receive all algorithms, source code, and documentation used by the ASTER GDS to process ASTER Level 0 data to Level 1 and higher level standard products.	V2.0-ICT-12
ASTER-0030	ECS (EDC DAAC) shall have the capability to send and ASTER GDS shall have the capability to receive all algorithms, source code, and documentation used by ECS to process ASTER Level 1 data to higher level products.	V2.0-ICT-12
ASTER-0050#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive requests for updates to the ASTER operations data base.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0060#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive an updated EOC operations data base, containing at a minimum, spacecraft and instrument telemetry formats, limits, and associated information and ASTER instrument command formats and associated information.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0100	ASTER GDS shall have the capability to send and ECS shall have the capability to receive information on ASTER instrument operations and	V2.0-ICT-12

	constraints that may be applicable to DAR specification. The ASTER instrument constraint information shall include (at a minimum): a. descriptive information for the ASTER instrument b. default settings for instrument configurable parameters c. range of values for instrument configurable parameters d. instrument constraint information	
ASTER-0110	ECS shall have the capability to send and ASTER GDS shall have the capability to receive DARs for the ASTER instrument. DARs shall contain the following information, at a minimum: a. Observation number b. Experimenter identification c. Experimenter address d. Investigation identification e. Scientific discipline f. Observation repetition period g. Tolerance in observation time h. User priority i. Scheduling priority and target of opportunity flag j. Descriptive text k. Location data expressed in terms of longitude and latitude as earliest start coordinates and latest stop coordinates l. Earliest start time m. Latest stop time n. Minimum coverage required o. Maximum coverage desired p. Deleted q. Deleted r. Associated product generation request and product distribution request s. Pointing angle t. Calibration requirements u. Coordination requirements v. Data transmission requirements w. Illumination requirements (day/night) x. Specific time of observation y. Sun angle z. Direct downlink option	V2.0-ICT-12
ASTER-0120	ASTER GDS shall have the capability to send and	V2.0-ICT-12

	ECS shall have the capability to receive DAR status, when requested by ECS. DAR status shall include such information as confirmation or rejection of the DAR, and notification of DAR scheduling and completion, to include at a minimum: a.　　Date and time b.　　Instrument ID c.　　DAR ID d.　　Request status e.　　Implementation schedule f.　　If rejection, then the reason for the rejection.	
ASTER-0130	ECS shall have the capability to send and ASTER GDS shall have the capability to receive queries for the current status of ASTER DARs which were previously submitted to the ASTER GDS by ECS.	V2.0-ICT-12
ASTER-0200#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive planning aids (e.g., predicted orbit data, and spacecraft maneuver information).	V2.0-EGS-06 V2.0-ICT-14
ASTER-0210#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive ASTER instrument resource profiles and instrument resource deviation lists (when a resource profile exists).	V2.0-EGS-06 V2.0-ICT-14
ASTER-0220#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive a notification when ASTER instrument resource profile information cannot be integrated into the preliminary resource schedule.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0230#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive a preliminary resource schedule. The preliminary resource schedule shall include, at a minimum, the following: a. Activity and DAR identifiers b. Resource availability and usage requirements c. Time constraints d. TDRSS schedule	V2.0-EGS-06 V2.0-ICT-14

ASTER-0240#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive instrument activity lists and instrument activity deviation lists (when an activity list exists) and any updates thereto.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0250#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive a notification when the ASTER instrument activities cannot be integrated into the detailed activity schedule.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0260#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive detailed activity schedules and any updates. The detailed activity schedule shall include, at a minimum, the following: a. Instrument activities b. Spacecraft activities necessary to support all instrument activities c. All spacecraft activities necessary for spacecraft subsystem maintenance d. Spacecraft resource requirements for each activity e. Traceability of instrument activities to DARs	V2.0-EGS-06 V2.0-ICT-14
ASTER-0300#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive, both electronically and by voice, information to facilitate, at a minimum, the following: a. Planning of coordinated operations b. Resolution of conflicts c. Exchange of instrument status	V2.0-EGS-06 V2.0-ICT-14
ASTER-0310#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive, both electronically and by voice, information to facilitate, at a minimum, the following: a. Planning of coordinated operations b. Resolution of conflicts c. Exchange of instrument status	V2.0-EGS-06 V2.0-ICT-14
ASTER-0340#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive "What-If"	V2.0-EGS-06 V2.0-ICT-14

	planning and scheduling inputs.	
ASTER-0350#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive "What-If" planning and scheduling results.	V2.0-EGS-06
ASTER-0350#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive "What-If" planning and scheduling results.	V2.0-ICT-14
ASTER-0410#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive command load generation status information, including at a minimum, the following: a. Spacecraft Control Computer (SCC)-stored command load report b. Integrated report having orbital events, command execution times, and TDRSS contacts with candidate loads	V2.0-EGS-06 V2.0-ICT-14
ASTER-0520#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive real time command requests.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0530#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive instrument command uplink status. Instrument command uplink status shall include (at a minimum): a. receipt of the command group at the EOC b. validation status at the EOC c. receipt of the command at the AM-1 spacecraft	V2.0-EGS-06 V2.0-ICT-14
ASTER-0540#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive pre-planned command groups.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0550#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive instrument command notification when ECS issues emergency/contingency ASTER command groups.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0570#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive ASTER instrument status data.	V2.0-EGS-06 V2.0-ICT-14

ASTER-0580#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive AM-1 spacecraft status data.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0590#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive mission status reports.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0700	ASTER GDS shall have the capability to send and ECS (EDC DAAC) shall have the capability to receive Level 1 data, ancillary data, metadata, and browse.	V2.0-ICT-12
ASTER-0730#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive orbit data anomaly notifications.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0740#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive repaired orbit and attitude data provided to ECS by the GSFC Flight Dynamics Facility.	V2.0-EGS-06 V2.0-ICT-14
ASTER-0760	ASTER GDS shall have the capability to send and ECS shall have the capability to receive data availability schedules for ASTER GDS data products which were requested by ECS.	V2.0-ICT-12
ASTER-0770	ECS shall have the capability to send and ASTER GDS shall have the capability to receive data availability schedules for ECS data products which were requested by ASTER GDS.	V2.0-ICT-12
ASTER-0800	ECS shall have the capability to send and ASTER GDS shall have the capability to receive dependent valids information related to ECS data products.	V2.0-ICT-12
ASTER-0805	ASTER GDS shall have the capability to send and ECS shall have the capability to receive dependent valids information related to ASTER GDS data products.	V2.0-ICT-12
ASTER-0810	ECS shall have the capability to send and ASTER GDS shall have the capability to receive directory metadata related to ECS data products.	V2.0-ICT-12
ASTER-0815	ASTER GDS shall have the capability to send and ECS shall have the capability to receive directory metadata related to ASTER GDS data products.	V2.0-ICT-12
ASTER-0820	ECS shall have the capability to send and ASTER GDS shall have the capability to receive inventory	V2.0-ICT-12

	search requests.	
ASTER-0825	ECS shall have the capability to send and ASTER GDS shall have the capability to receive guide search requests.	V2.0-ICT-12
ASTER-0830	ECS shall have the capability to send and ASTER GDS shall have the capability to receive browse requests.	V2.0-ICT-12
ASTER-0835	ASTER GDS shall have the capability to send and ECS shall have the capability to receive inventory data search results.	V2.0-ICT-12
ASTER-0840	ASTER GDS shall have the capability to send and ECS shall have the capability to receive guide search results.	V2.0-ICT-12
ASTER-0845	ASTER GDS shall have the capability to send and ECS shall have the capability to receive browse results.	V2.0-ICT-12
ASTER-0850	ASTER GDS shall have the capability to send and ECS shall have the capability to receive inventory search requests.	V2.0-ICT-12
ASTER-0855	ASTER GDS shall have the capability to send and ECS shall have the capability to receive guide search requests.	V2.0-ICT-12
ASTER-0860	ASTER GDS shall have the capability to send and ECS shall have the capability to receive browse requests.	V2.0-ICT-12
ASTER-0865	ECS shall have the capability to send and ASTER GDS shall have the capability to receive inventory search results.	V2.0-ICT-12
ASTER-0870	ECS shall have the capability to send and ASTER GDS shall have the capability to receive guide search results.	V2.0-ICT-12
ASTER-0875	ECS shall have the capability to send and ASTER GDS shall have the capability to receive browse results.	V2.0-ICT-12
ASTER-0880	ECS shall have the capability to send and ASTER GDS shall have the capability to receive user authentication requests for ASTER GDS privileges of EOSDIS users.	V2.0-ICT-12
ASTER-0885	ASTER GDS shall have the capability to send and ECS shall have the capability to receive user authentication information specifying ASTER GDS privileges for EOSDIS users.	V2.0-ICT-12
ASTER-0890	ASTER GDS shall have the capability to send and ECS shall have the capability to receive user	V2.0-ICT-12

	authentication requests for ECS privileges of ASTER GDS users.	
ASTER-0890#B	ASTER GDS shall have the capability to send and ECS shall have the capability to receive user authentication requests for ECS privileges of ASTER GDS users.	V2.0-EGS-07
ASTER-0895	ECS shall have the capability to send and ASTER GDS shall have the capability to receive user authentication information specifying ECS privileges for ASTER GDS users.	V2.0-ICT-12
ASTER-0895#B	ECS shall have the capability to send and ASTER GDS shall have the capability to receive user authentication information specifying ECS privileges for ASTER GDS users.	V2.0-EGS-07
ASTER-0900	ECS shall have the capability to send and ASTER GDS shall have the capability to receive product requests for ASTER GDS data products.	V2.0-ICT-12
ASTER-0905	ECS shall have the capability to send and ASTER GDS shall have the capability to receive product generation requests for ASTER GDS data products. Product generation requests will include an associated product distribution request.	V2.0-ICT-12
ASTER-0910	ASTER GDS shall have the capability to send and ECS shall have the capability to receive product delivery status information. Product delivery status information contains the following information, at a minimum: a. Requester identification b. Request identification c. Request status d. If rejection, then the reason for the rejection e. If delayed longer than the latest completion time specified by the user, adjusted start and stop times.	V2.0-ICT-12
ASTER-0915	ECS shall have the capability to send and ASTER GDS shall have the capability to receive requests for product delivery status.	V2.0-ICT-12
ASTER-0920	ASTER GDS shall have the capability to send and ECS shall have the capability to receive product requests for ECS data products.	V2.0-ICT-12
ASTER-0925	ASTER GDS shall have the capability to send and ECS shall have the capability to receive product	V2.0-ICT-12

	generation requests for ECS data products. Product generation requests will include an associated product distribution request.	
ASTER-0930	ECS shall have the capability to send and ASTER GDS shall have the capability to receive product delivery status information. Product delivery status information contains the following information, at a minimum: a. Requester identification b. Request identification c. Request status d. If rejection, then the reason for the rejection e. If delayed longer than the latest completion time specified by the user, adjusted start and stop times.	V2.0-ICT-12
ASTER-0935	ASTER GDS shall have the capability to send and ECS shall have the capability to receive requests for product delivery status.	V2.0-ICT-12
ASTER-0940	ECS shall have the capability to send and ASTER GDS shall have the capability to receive Expedited Level 0 and ECS data products, in response to a request from the ASTER GDS.	V2.0-ICT-12
ASTER-0945	ASTER GDS shall have the capability to send and ECS shall have the capability to receive ASTER data products, in response to a request from ECS.	V2.0-ICT-12
ASTER-1030	ASTER GDS shall provide the necessary communications connections to the trans-Pacific link.	V2.0-ICT-12
ASTER-1045	ASTER GDS shall provide any necessary protocol translation, termination, bridging, and routing for ASTER GDS communications interfaces to the trans-Pacific link for ECS communications.	V2.0-ICT-12
ASTER-1060	ECS shall provide support for Transport Control Protocol/Internet Protocol (TCP/IP) communications protocols to the U.S. Gateway for ASTER GDS communications.	V2.0-ICT-12
ASTER-1060#B	ECS shall provide support for Transport Control Protocol/Internet Protocol (TCP/IP) communications protocols to the U.S. Gateway for ASTER GDS communications.	V2.0-EGS-06 V2.0-ICT-14
ASTER-1065	ASTER GDS shall provide support for Transport Control Protocol/Internet Protocol (TCP/IP) communications protocols to the trans-Pacific link	V2.0-ICT-12

	for ECS communications.	
ASTER-2000	ECS functions shall have an operational availability (computed as defined in the Functional and Performance Requirements Specification for the EOSDIS Core System) of 0.96 at a minimum and a Mean Down Time (MDT) of four (4) hours or less, unless otherwise specified.	V2.0-ICT-12
ASTER-2060	The ECS SDPS function of receiving science data shall have an operational availability of 0.999 at a minimum and an MDT of two (2) hours or less.	V2.0-ICT-12
ASTER-2060#B	The ECS SDPS function of receiving science data shall have an operational availability of 0.999 at a minimum and an MDT of two (2) hours or less.	RAO_TEST_1
ASTER-2080	The ECS function for gathering and disseminating management information shall have an operational availability of .998 at a minimum and an MDT of 20 minutes or less, for critical services.	V2.0-ICT-12
ASTER-4000	The ASTER GDS shall have an operational availability of 0.96 at a minimum and a Mean Down Time (MDT) of four (4) hours or less, unless otherwise specified. [TBD]	V2.0-ICT-12
ASTER-4030	The ASTER GDS shall have an operational availability of 0.99925 at a minimum and a MDT of five (5) minutes or less for real time functions. [TBD]	V2.0-ICT-12
ASTER-4060	The ASTER GDS function of receiving science data shall have an operational availability of 0.999 at a minimum and an MDT of two (2) hours or less. [TBD]	V2.0-ICT-12
ASTER-4080	The ASTER GDS function for gathering and disseminating management information shall have an operational availability of .998 at a minimum and an MDT of 20 minutes or less, for critical services. [TBD]	V2.0-ICT-12
ASTER-5000	The estimated volume of ASTER Level 1a data sent from the ASTER GDS to ECS is 131,472 GB/day.	V2.0-ICT-12
ASTER-5010	The estimated volume of ASTER Level 1b data sent from the ASTER GDS to ECS is the data volume that results when at least 40% of the ASTER Level 1a data is processed to Level 1b.	V2.0-ICT-12
DADS0010	Each DADS shall receive updated metadata for products that have been QA'd.	V1-TST-03
DADS0020	Each DADS shall, upon receipt of updated	V1-TST-03

	metadata for products which have been QA'd, store the metadata in its inventory.	
DADS0130#B	Each DADS shall receive from the EDOS, at a minimum, the following: a. Production data (L0) b. Expedited data	V2.0-SFQ-01
DADS0145	Each DADS shall be capable of receiving from the ADCs, at a minimum, the following for the purpose of product generation: a. L0-L4 equivalent data sets b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	V1-TST-01 V1-TST-03
DADS0145	Each DADS shall be capable of receiving from the ADCs, at a minimum, the following for the purpose of product generation: a. L0-L4 equivalent data sets b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	NEWTEST-001
DADS0145#B	Each DADS shall be capable of receiving from the ADCs, at a minimum, the following for the purpose of product generation: a. L0-L4 equivalent data sets b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	V2.0-ICT-04
DADS0170	Each DADS shall be capable of receiving from designated EPDSs and ODCs, at a minimum, the following: a. L0-L4 data sets b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	V1-TST-01
DADS0170	Each DADS shall be capable of receiving from designated EPDSs and ODCs, at a minimum, the following: a. L0-L4 data sets b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	V1-TST-03
DADS0220	Each DADS shall accept, at a minimum, the following data types in support of development of initial calibration: a. Instrument	V1-TST-03

	calibration data b. Scientific calibration	
DADS0250	Each DADS shall receive, at a minimum, data in the following forms: a.　　　Physical electronic media b. Electronic communications network c.　　　Hardcopy media	V1-TST-01
DADS0250	Each DADS shall receive, at a minimum, data in the following forms: a.　　　Physical electronic media b. Electronic communications network c.　　　Hardcopy media	V1-TST-03
DADS0260	Each DADS shall receive non-EOS correlative and ancillary digital　　data.	V1-TST-03
DADS0281	Each DADS shall be capable of ingesting and storing data to support　　　　the instrument science team(s) in: a. Pre-launch checkout of their　　　　instruments b. Pre-launch science checkout c. Development of initial　　　calibration information	V1-TST-01 V1-TST-03
DADS0290	Each DADS shall check all metadata and data it receives. For each　　　type of data described by the metadata, the data shall be checked　　　for the presence of required fields, error-free input, correctness　　　of the data set granule size, and other checks as required.	V1-TST-01 V1-TST-03
DADS0300	Each DADS shall generate status information indicating the success or　　　failure of metadata and data consistency checks.	V1-TST-01 V1-TST-03
DADS0310	Each DADS shall verify that data received came from an　　　approved/authorized source.	V1-TST-01 V1-TST-03
DADS0370	Each DADS shall provide the IMS with metadata on newly stored data　granules.	V1-TST-01 V1-TST-03
DADS0405	Each DADS shall provide the capability to archive multiple versions of　　selected archive data.	V1-TST-01 V1-TST-03
DADS0410	Each DADS shall archive the current version of a product, making the　preceding version of a product eligible for deletion.	V1-TST-01 V1-TST-03
DADS0440	Each DADS shall provide storage, at a minimum, for the following EOS data: a. Standard Products b. Associated correlative data sets c. Associated ancillary data sets d. Associated calibration data sets e. Associated metadata f. Documents g. Algorithms h. Format descriptions　　(e.g., HDF spec.)	V1-TST-03
DADS0475	The DADS shall provide storage for the following TRMM data: a. L1A-L4　　　equivalent data products b. Associated correlative data sets c.	V1-TST-01 V1-TST-03

	Associated ancillary data sets d. Associated calibration data sets e. Associated metadata f. Documents g. Algorithms.	
DADS0490	Each DADS shall archive Level 1B - Level 4 data products.	V1-TST-01 V1-TST-03
DADS0490	Each DADS shall archive Level 1B - Level 4 data products.	V1-TST-03
DADS0590#B	Each DADS shall support the capability for subsetting, and subsampling data products ordered via the IMS.	V2.0-SFQ-06
DADS0610	Each DADS shall support reprocessing.	V1-TST-01 V1-TST-03
DADS0660	Each DADS shall maintain a database of orders which shall include at a minimum: priorities, distribution directions, and all other details necessary to process orders including standing and multi-DADS orders.	V1-TST-01 V1-TST-03
DADS0740#B	Each DADS shall provide the capability to subset, subsample, or average data within a granule based on defined criteria to include: a. Geographic location (x, y, z) (spatial with rectangular boundaries) b. Spectral band c. Time d. WRS	V2.0-SFQ-06
DADS0760	The DADS shall distribute data in approved standard formats including HDF and the Landsat 7 standard format (Landsat data only).	V1-TST-01 V1-TST-03
DADS0930#B	Each DADS shall provide the IMS an estimate of the staging delay before subsetted, subsampled, or summary data sets are available.	V2.0-SFQ-06
DADS1030	Each DADS shall generate data distribution status to monitor the progress of the distribution process.	V1-TST-01 V1-TST-03
DADS1070	The DADS shall send data check and storage status to the provider of ingest data.	V1-TST-01 V1-TST-03
DADS1080	Each DADS shall maintain a data receipt log.	V1-TST-03
DADS1300	Each DADS shall display all faults to the system operators.	V1-TST-01 V1-TST-03
DADS1330	Each DADS shall provide information to support fault isolation between the DADS and other ECS-unique elements and external interfaces to	V1-TST-03

	the LSM.	
DADS1380	Each DADS shall monitor data transfer between external (non-ECS) elements and the DADS.	V1-TST-01 V1-TST-03
DADS1390	Each DADS shall monitor data transfer between elements of the ECS and the DADS.	V1-TST-01 V1-TST-03
DADS1400	Each DADS shall notify the originating source of the need to retransmit data in the event of transmission difficulties.	V1-TST-01 V1-TST-03
DADS1472	Each DADS shall contain the appropriate capacity to respond to contingencies, scheduling problems, and peak loads.	V1-TST-01 V1-TST-03
DADS1472#B	Each DADS shall contain the appropriate capacity to respond to contingencies, scheduling problems, and peak loads.	V2.0-SFQ-01 V2.0-SFQ-02
DADS1475#B	Each DADS shall provide tools to the users to perform: a. Format conversion of EOS data b. Subsetting c. Compression (lossy, lossless) d. Data transformation e. Subsampling	V2.0-SFQ-06
DADS1510	Each DADS shall ensure that IMS acknowledges receipt of metadata on all products stored in the DADS.	V1-TST-03
DADS1520	Each DADS shall provide an FSMS. Storage shall	

	with the unique Data set ID.	V1-TST-03
DADS1800	Each DADS shall maintain data storage inventories defining the physical location of files.	V1-TST-01 V1-TST-03
DADS1805	The DADS shall provide an inventory system capable, at a minimum, of the following: a. Accepting the number of new inventory entries, one per granule, for the number of granules per day as specified in Appendix C b. Uniquely identifying each data granule c. Tracking the physical location of each data granule.	V1-TST-01 V1-TST-03
DADS1806	Each DADS shall provide the capability of retrieving any data granule stored in the archives.	V1-TST-01 V1-TST-03
DADS2000#B	Each DADS shall receive from the SMC scheduling directives in response to emergency situations.	V2.0-SFQ-02
DADS2040#B	Each DADS shall insure that data sent by EDOS and SDPF has been received and validated.	V2.0-SFQ-01
DADS2160	Each DADS shall maintain a list/schedule of standing orders.	V1-TST-01 V1-TST-03
DADS2180	Each DADS shall maintain a list/schedule of reprocessed data.	V1-TST-01 V1-TST-03
DADS2200#B	Each DADS shall maintain a list of data which requires some form of data manipulation such as subsetting.	V2.0-SFQ-06
DADS2270#B	Each DADS shall provide, on a scheduled basis, an off-site backup copy of all EOS data which would be impossible or difficult to recover in case of loss (e.g., ancillary data, metadata, command history, algorithms, engineering data, calibration data, systems and applications software, selected data products, depending on need).	V2.0-SFQ-01
DADS2276	Each DADS shall have the capability to restore its archive by storing a backup copy of EOS data or backup copy of information required to regenerate the data.	V1-TST-01
DADS2276#B	Each DADS shall have the capability to restore its archive by storing a backup copy of EOS data or backup copy of information required to regenerate the data.	V2.0-SFQ-01

DADS2300	Each DADS shall provide a capability for local and offsite backup/restore of system files.	V1-TST-01
DADS2300#B	Each DADS shall provide a capability for local and offsite backup/restore of system files.	V2.0-SFQ-01
DADS2315	Each DADS shall be capable of providing access to data to support the instrument science team(s) in: a. Pre-launch checkout of their instruments b. Pre-launch science checkout c. Development of initial calibration information.	V1-TST-01 V1-TST-03
DADS2320	Each DADS shall send to the IMS, at a minimum, the following: a. Metadata b. Documentation c. Product status dialog	V1-TST-01 V1-TST-03
DADS2340	Each DADS shall send to remote DAACs, at a minimum, the following: a. L0-L4 b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms h. Spacecraft and instrument logs	V1-TST-01 V1-TST-03
DADS2370#B	Each DADS shall send to the user, at a minimum, the following: a. L0-L4 b. Special products (L1-L4) c. Metadata d. Ancillary data e. Calibration data f. Correlative data g. Documents h. Algorithms i. Planning and scheduling information	V2.0-SFQ-03
DADS2380#A	Each DADS shall send to the SCF, at a minimum, the following: a. L0-L4 b. Expedited data d. Metadata e. Ancillary data f. Calibration data g. Correlative data h. Documents i. Algorithms	RAO_TST
DADS2410	Each DADS shall distribute data from the archive in response to receipt of a product order from the IMS.	V1-TST-01 V1-TST-03
DADS2430	Each DADS shall be capable of distributing any	V1-TST-01

	data granule stored in the archive.	V1-TST-03
DADS2450	Each DADS shall distribute data to elements of EOSDIS and approved non- EOSDIS data destinations.	V1-TST-01 V1-TST-03
DADS2470#B	Each DADS shall transfer Standard Products and subsetted, subsampled, or summary data to the requester.	V2.0-SFQ-06
DADS2480	Each DADS shall distribute data based upon entries in the standing and the retrospective order distribution list.	V1-TST-01
DADS2490	Each DADS shall distribute data using a variety of approved high density storage media such as : a. 8 mm tape b. 4 mm DAT c. 3480/3490 tape d. CD ROM e. 6250 tape	V1-TST-01 V1-TST-03 V2.0-SFQ-03
DADS2510	Each DADS shall copy data to the class of physical media specified in the product order from the IMS.	V1-TST-01 V1-TST-03 V2.0-SFQ-03
DADS2530#B	The DADS shall be capable of distributing by physical media to meet user demand.	V2.0-SFQ-03
DADS2580	Each DADS shall distribute data electronically using a variety of networks and methods including FAX.	V2.0-SFQ-03
DADS2950#B	In case of failure of the automated system, archive media must be capable of being manually mounted at each DADS.	V2.0-SFQ-01
DERIVE0001	Accept DANs from multiple sources asynchronously, i.e., before finishing the previous one.	V1-TST-01 V1-TST-03
EDOS-4.1.1.1#B	EDOS shall interface with the EOC to transfer Operations Management Data, and Operations Management Test Data.	V2.0-EOC-01
EDOS-4.1.1.2#A	EDOS shall interface with the EOC to receive Command Data Blocks (CDBs), Command Test Blocks, and Operations Management Data.	V1-EOC-02
EDOS-4.1.1.2#B	EDOS shall interface with the EOC to receive Command Data Blocks (CDBs), Command Test Blocks, and Operations Management Data.	V2.0-EOC-02
EDOS-4.1.1.3#A	EDOS shall provide the capability to transfer return link real-time Path Service EDOS Data Units (EDUs) to the EOC.	V1-EOC-01

EDOS-4.1.1.3#B	EDOS shall provide the capability to transfer return link real-time Path Service EDOS Data Units (EDUs) to the EOC.	V2.0-EOC-01
EDOS-4.1.1.4#B	EDOS shall provide the capability to transfer Command Link Control Word (CLCW) EDUs to the EOC.	V2.0-EOC-02
EDOS-4.1.1.6#B	EDOS shall provide the capability to transfer Customer Operations Data Accounting (CODA) reports as specified in Applicable Document 1 to the EOC.	V2.0-EOC-01
EDOS-4.1.1.8#B	EDOS shall provide the capability to transfer Rate Buffered Data to the EOC, as specified in Applicable Document 1.	V2.0-EOC-01
EDOS-4.1.2.1#B	EDOS shall interface with the Langley Research Center (LaRC) DAAC to transfer Operations Management Data, PDSs, EDSs, Mission Test Data, and Operations Management Test Data.	V2.0-ICT-03
EDOS-4.1.2.3#B	EDOS shall provide the capability to transfer PDS Delivery Records as specified in Applicable Document 1 to the LaRC DAAC following the delivery of each PDS.	V2.0-ICT-03
EDOS-4.1.2.7#B	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2,3,4, and 5 for communications services to provide guaranteed data delivery for the following data types: a. PDS Delivery Records b. Reserved c. Reserved d. Service Request Dispositions e. PDSs f. EDSs g. EDS Delivery Records	V2.0-ICT-03
EDOS-4.1.3.1#B	EDOS shall interface with the GSFC DAAC to transfer Mission Data, Operations Management Data, Mission Test Data, and Operations Management Test Data.	V2.0-ICT-03
EDOS-4.1.3.3#B	EDOS shall provide the capability to transfer PDS Delivery Records as specified in Applicable Document 1 to the GSFC DAAC following the delivery of each PDS.	V2.0-ICT-03
EDOS-4.1.3.7#B	EDOS shall conform to Internet protocol standards as specified in Applicable Documents 2,3,4, and 5 for communications services to	V2.0-ICT-03

	provide guaranteed data delivery for the following data types: a. PDS Delivery Records b. Reserved c. Reserved d. Service Request Dispositions e. PDSs f. Reserved g. EDSs h. EDS Delivery Records	
EDOS-4.2.1.4#B	The EDOS-EOC interface shall provide the capability to support the transfer of real-time return link data at a rate of up to 32 kbps.	V2.0-EOC-01
EDOS-4.2.1.5#A	The EDOS-EOC interface shall provide the capability to support the transfer of real-time forward link data at a rate of up to 10 kbps.	V1-EOC-02
EDOS-4.2.1.5#B	The EDOS-EOC interface shall provide the capability to support the transfer of real-time forward link data at a rate of up to 10 kbps.	V2.0-EOC-02
EDOS-4.2.1.6#B	The EDOS-EOC interface shall provide the capability to support the transfer of rate buffered return link data at a rate of up to 1.5 Mbps.	V2.0-EOC-01
EDOS-4.2.1.7#B	The EDOS-EOC interface shall provide the capability to support the transfer of CODA messages to the EOC every 5 seconds.	V2.0-EOC-01
EDOS-4.6.1.1#B	EDOS shall conform to Internet protocol standards for communications services as specified in Applicable Documents 2, 3, 4, and 5.	V2.0-ICT-03
EDOS-4.6.1.2#A	EDOS shall transfer real-time return link data using UDP/IP.	V1-EOC-01
EDOS-4.6.1.2#B	EDOS shall transfer real-time return link data using UDP/IP.	V2.0-EOC-01
EDOS-4.6.1.3#A	EDOS shall receive real-time forward link data using UDP/IP.	V1-EOC-02
EDOS-4.6.1.3#B	EDOS shall receive real-time forward link data using UDP/IP.	V2.0-EOC-02
EDOS-4.6.1.5#B	EDOS shall transfer CODA reports using UDP/IP.	V2.0-EOC-01
EDOS-4.6.1.8#B	EDOS shall transfer rate-buffered return link data using FTP.	V2.0-EOC-01
EOC-0030#B	The EOC shall receive the LTSP and LTIP from the SMC.	V2.0-EOC-03
EOC-0040#A		V1-EOC-01

	The EOC shall interface with EDOS for coordinating EDOS-provided services required by the EOC.	V1-EOC-02
EOC-0040#B	The EOC shall interface with EDOS for coordinating EDOS-provided services required by the EOC.	V2.0-EOC-01 V2.0-EOC-02
EOC-1005#B	The EOC shall provide the IMS with spacecraft information, including at a minimum orbit information, for use in DAR generation.	V2.0-EOC-03
EOC-2010#B	The EOC shall accept from the FDF planning and scheduling information for the EOS spacecraft and instruments, which includes, at a minimum, the following: a. Predicted orbit data including predicted ground track b. EOS spacecraft UAV data c. PSATs d. Spacecraft maneuver information	V2.0-EOC-03
EOC-2020#A	The EOC shall generate the long-term spacecraft operations plan, based upon, at a minimum, the following: a. LTSP from the IWG. b. LTIPs from the IWG. c. Spacecraft maneuvers and other spacecraft activities that have potential to impact mission operations	V1-EOC-03
EOC-2020#B	The EOC shall generate the long-term spacecraft operations plan, based upon, at a minimum, the following: a. LTSP from the IWG. b. LTIPs from the IWG. c. Spacecraft maneuvers and other spacecraft activities that have potential to impact mission operations	V2.0-EOC-03
EOC-2030#A	The EOC shall store and maintain EOS planning and scheduling information, which includes, at a minimum, the following: a. IWG science guidelines, as specified in the LTSP and LTIP b. Long-term spacecraft operations plan	V1-EOC-03

	c. Predicted availability of the spacecraft resources d. Baseline activity profile for each applicable instrument e. Planning and scheduling information received from the FDF f. Preliminary resource schedules, including TDRSS contact times g. Detailed activity schedules, including TDRSS contact times	
EOC-2030#B	The EOC shall store and maintain EOS planning and scheduling information, which includes, at a minimum, the following: a. IWG science guidelines, as specified in the LTSP and LTIP b. Long-term spacecraft operations plan c. Predicted availability of the spacecraft resources d. Baseline activity profile for each applicable instrument e. Planning and scheduling information received from the FDF f. Preliminary resource schedules, including TDRSS contact times g. Detailed activity schedules, including TDRSS contact times	V2.0-EOC-03
EOC-2070#A	The EOC shall provide the capability to generate a spacecraft subsystem resource profile, based, at a minimum, on the following: a. Spacecraft orbit maintenance needs b. Spacecraft navigation needs c. Spacecraft subsystem maintenance needs	V1-EOC-03
EOC-2070#B	The EOC shall provide the capability to generate a spacecraft subsystem resource profile, based, at a minimum, on the following: a. Spacecraft orbit maintenance needs b. Spacecraft navigation needs c. Spacecraft subsystem maintenance needs	V2.0-EOC-03
EOC-2160#B	The EOC shall provide plans and schedules to the IMS.	V2.0-EOC-03
EOC-2170#A	The EOC shall be capable of planning and scheduling observations for which time may be	V1-EOC-03

	specified in fixed or variable terms.	
EOC-2170#B	The EOC shall be capable of planning and scheduling observations for which time may be specified in fixed or variable terms.	V2.0-EOC-03
EOC-2180#A	The EOC shall be capable of planning and scheduling observations for those EOS instruments whose operations may be periodic, intermittent, or continuous.	V1-EOC-03
EOC-2180#B	The EOC shall be capable of planning and scheduling observations for those EOS instruments whose operations may be periodic, intermittent, or continuous.	V2.0-EOC-03
EOC-2190#B	The EOC shall be capable of planning and scheduling coordinated observations involving multiple instruments.	V2.0-EOC-03
EOC-2200#A	The EOC shall plan and schedule the management of spacecraft resources that include, at a minimum, the following: b. Communications subsystems d. SCC-stored command table.	V1-EOC-03
EOC-2200#B	The EOC shall plan and schedule the management of spacecraft resources that include, at a minimum, the following: a. Spacecraft recorder b. Communications subsystems c. Thermal and power subsystems d. SCC-stored command table.	V2.0-EOC-03
EOC-2210#A	The EOC shall have the capability to generate plans and schedules in both human readable and machine usable forms.	V1-EOC-03
EOC-2210#B	The EOC shall have the capability to generate plans and schedules in both human readable and machine usable forms.	V2.0-EOC-03
EOC-2220#A	The EOC shall identify and resolve conflicts based on, at a minimum, the following: a. Resources needed for each observation or	V1-EOC-03

	instrument support activity b. Resources needed for each spacecraft subsystem activity, if applicable c. Inter-instrument dependency d. In situ observation dependency e. Priorities set by the LTSP	
EOC-2220#B	The EOC shall identify and resolve conflicts based on, at a minimum, the following: a. Resources needed for each observation or instrument support activity b. Resources needed for each spacecraft subsystem activity, if applicable c. Inter-instrument dependency d. In situ observation dependency e. Priorities set by the LTSP	V2.0-EOC-03
EOC-2230#B	If conflicts cannot be resolved in EOS planning and scheduling, the EOC shall make a choice between competing activities based on negotiations with and between the ICCs or on a decision by the Project Scientist or his designee.	V2.0-ICT-13
EOC-2240#B	The EOC shall reintroduce applicable requested activities in its planning and scheduling function when the activity did not occur due to a deviation from the schedule.	V2.0-EOC-03 V2.0-ICT-13
EOC-2250#A	The EOC shall be capable of performing its planning and scheduling function in batch and incremental interactive-user modes.	V1-EOC-03
EOC-2250#B	The EOC shall be capable of performing its planning and scheduling function in batch and incremental interactive-user modes.	V2.0-EOC-03 V2.0-ICT-13
EOC-2260#B	The EOC shall provide "what-if" capabilities for planning and scheduling analysis, and provide them to authorized users, including the ICCs.	V2.0-EOC-03 V2.0-ICT-13
EOC-2270#A	The EOC shall accept an instrument resource profile or instrument resource deviation list (when a resource profile exists for the instrument) from each ICC.	V1-EOC-03 V2.0-ICT-13
EOC-2270#B		V2.0-EOC-03

	The EOC shall accept an instrument resource profile or instrument resource deviation list (when a resource profile exists for the instrument) from each ICC.	V2.0-ICT-13

EOC-2272#A

	d. Science guidelines e. Spacecraft operations constraints f. TDRSS schedule	
EOC-2300#B	The EOC shall build or update the preliminary resource schedule based on the following, at a minimum: a. Existing preliminary resource schedules, if any b. Instrument resource profiles c. Spacecraft subsystems resource profile d. Science guidelines e. Spacecraft operations constraints f. TDRSS schedule	V2.0-EOC-03
EOC-2310#A	The EOC shall build a preliminary resource schedule by performing the following: a. Integrating the spacecraft subsystems resource profile and individual instrument resource profiles b. Determining if required resources, including SN resources, are within limits c. Using guidelines established by the LTSP d. Resolving conflicts between the proposed activities	V1-EOC-03
EOC-2310#B	The EOC shall build a preliminary resource schedule by performing the following: a. Integrating the spacecraft subsystems resource profile and individual instrument resource profiles b. Determining if required resources, including SN resources, are within limits c. Using guidelines established by the LTSP d. Resolving conflicts between the proposed activities	V2.0-EOC-03
EOC-2320#A	The preliminary resource schedule shall include, at a minimum, the following: a. Activity or DAR identifiers b. Resource availability and usage requirements c. Time constraints and alternatives for planned activities d. TDRSS schedule	V1-EOC-03 V1-ICT-13
EOC-2320#B	The preliminary resource schedule shall include, at a minimum, the following: a. Activity or DAR identifiers	V2.0-EOC-03

	b. Resource availability and usage requirements c. Time constraints and alternatives for planned activities d. TDRSS schedule	
EOC-2350#A	The EOC shall provide the preliminary resource schedule to the ICCs upon generation.	V1-EOC-03 V1-ICT-13
EOC-2350#B	The EOC shall provide the preliminary resource schedule to the ICCs upon generation.	V2.0-EOC-03 V2.0-ICT-13
EOC-2370#B	The EOC shall generate TDRSS schedule requests based on the data rate profiles of all the instruments and spacecraft subsystems.	V2.0-EOC-03
EOC-2400#B	The EOC shall submit the TDRSS schedule requests to the NCC.	V2.0-EOC-03 V2.0-ICT-09
EOC-2405#B	The EOC shall accept the forecast TDRSS schedule from the NCC.	V2.0-EOC-03 V2.0-ICT-09
EOC-2410#B	The EOC shall accept from the NCC notification of rejection along with the reason for rejection, when all or a portion of the TDRSS schedule request cannot be accommodated.	V2.0-EOC-03 V2.0-ICT-09
EOC-2420#B	In response to the rejection of a TDRSS schedule request, the EOC shall have the capability to modify the request for resubmission to the NCC.	V2.0-EOC-03 V2.0-ICT-09
EOC-2460#A	The EOC shall be capable of generating or updating a spacecraft subsystem activity list based on at a minimum the following: a. Existing detailed activity schedule b. Preliminary resource schedule c. Spacecraft subsystem activities identified after the preliminary resource schedule has been generated d. Current predicted orbit data and related information e. Responses to emergency/contingency situations	V1-EOC-03
EOC-2460#B	The EOC shall be capable of generating or updating a spacecraft subsystem activity list based on at a minimum the following:	V2.0-EOC-03

	a. Existing detailed activity schedule b. Preliminary resource schedule c. Spacecraft subsystem activities identified after the preliminary resource schedule has been generated d. Current predicted orbit data and related information e. Responses to emergency/contingency situations	
EOC-2480#A	The EOC shall accept from each ICC an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto.	V1-EOC-03 V1-ICT-13
EOC-2480#B	The EOC shall accept from each ICC an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto.	V2.0-EOC-03 V2.0-ICT-13
EOC-2482#A	For the instruments that have instrument activity deviation lists, the EOC shall build the instrument activity lists by combining the instrument activity deviation lists with the respective baseline activity profiles.	V1-EOC-03
EOC-2482#B	For the instruments that have instrument activity deviation lists, the EOC shall build the instrument activity lists by combining the instrument activity deviation lists with the respective baseline activity profiles.	V2.0-EOC-03
EOC-2490#A	For each day the EOC shall be capable of generating or updating a detailed activity schedule for each spacecraft and its instruments, nominally covering the next 7 days.	V1-EOC-03
EOC-2490#B	For each day the EOC shall be capable of generating or updating a detailed activity schedule for each spacecraft and its instruments, nominally covering the next 7 days.	V2.0-EOC-03
EOC-2510#A	The EOC shall generate a detailed activity schedule for the spacecraft and its instruments by: a. Integrating the spacecraft subsystem activity list and individual instrument activity lists	V1-EOC-03

	b. Determining if the aggregate resource requirements are within limits d. Ensuring that all the sequencing constraints among the proposed activities are respected e. Scheduling the spacecraft recorder, direct downlink, and communication subsystem operations	
EOC-2510#B	The EOC shall generate a detailed activity schedule for the spacecraft and its instruments by: a. Integrating the spacecraft subsystem activity list and individual instrument activity lists b. Determining if the aggregate resource requirements are within limits c. Identifying and resolving conflicts among the proposed activities d. Ensuring that all the sequencing constraints among the proposed activities are respected e. Scheduling the spacecraft recorder, direct downlink, and communication subsystem operations	V2.0-EOC-03
EOC-2520#B	If additional TDRSS schedule needs are identified while generating or updating a detailed activity schedule, the EOC shall make a request to the NCC for additional TDRSS services.	V2.0-EOC-03
EOC-2530#B	If the request to the NCC for additional SN services is denied, the EOC shall regenerate or modify a detailed activity schedule to account for the TDRSS service availability constraints.	V2.0-EOC-03
EOC-2535#B	The EOC shall be capable of scheduling the use of the DSN, GN, or WOTS, in the event of an emergency or contingency that prevents communication through the TDRSS.	V2.0-EGS-02
EOC-2540#A	The EOC shall notify the ICC of any instrument activities that cannot be integrated into a detailed activity schedule.	V1-EOC-03 V1-ICT-13
EOC-2540#B	The EOC shall notify the ICC of any instrument activities that cannot be integrated into a detailed activity schedule.	V2.0-EOC-03 V2.0-ICT-13
EOC-2550#A		V1-EOC-03

	The detailed activity schedule shall include, at a minimum, the following: a. Instrument activities b. Spacecraft activities necessary to support all instrument activities c. Spacecraft activities necessary for the spacecraft subsystem maintenance d. Spacecraft resource requirements for each activity e. Traceability of instrument activities to DARs	V1-ICT-13
EOC-2550#B	The detailed activity schedule shall include, at a minimum, the following: a. Instrument activities b. Spacecraft activities necessary to support all instrument activities c. Spacecraft activities necessary for the spacecraft subsystem maintenance d. Spacecraft resource requirements for each activity e. Traceability of instrument activities to DARs	V2.0-EOC-03
EOC-2555#A	The EOC shall evaluate the impact of a TOO observation, , or a change to a scheduled observation, on other previously scheduled activities.	V1-EOC-03
EOC-2555#B	The EOC shall evaluate the impact of a TOO observation, , or a change to a scheduled observation, on other previously scheduled activities.	V2.0-EOC-03
EOC-2570#B	In support of a TOO observation or late change, the EOC shall update the detailed activity schedule within 1 hour after receipt of the update to the corresponding instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument), if the update does not affect existing detailed activity schedule events or create new conflicts.	V2.0-EOC-03
EOC-2590#B	In support of a TOO observation or a late change, the EOC shall update the detailed activity schedule within 10 hours after the receipt of the update of the corresponding instrument activity	V2.0-EOC-03

	list (or instrument activity deviation list), if the update affects existing detailed activity schedule events or creates new conflicts.	
EOC-2620#A	The EOC shall provide the ICC with the detailed activity schedule and any updates upon generation.	V1-EOC-03 V1-ICT-13
EOC-2620#B	The EOC shall provide the ICC with the detailed activity schedule and any updates upon generation.	V2.0-EOC-03 V2.0-ICT-13
EOC-2620#B	The EOC shall provide the ICC with the detailed activity schedule and any updates upon generation.	V2.0-ICT-13
EOC-3015#B	The EOC shall accept SCC flight software updates from the SDVF.	V2.0-EOC-03
EOC-3017#B	The EOC shall accept from the FDF parameters necessary for spacecraft command data generation, including the following: a. Navigational operations parameters b. Spacecraft maneuver parameters	V2.0-EOC-03
EOC-3020#A	The EOC shall accept from the ICC instrument loads, SCC-stored instrument commands, and SCC-stored instrument tables as well as the associated information that includes at a minimum the following: a. Instrument identifier b. Schedule identifier, if applicable c. Identification of commands that could impact spacecraft or instrument safety (i.e., critical commands)	V1-EOC-03 V1-ICT-13
EOC-3020#B	The EOC shall accept from the ICC instrument loads, SCC-stored instrument commands, and SCC-stored instrument tables as well as the associated information that includes at a minimum the following: a. Instrument identifier b. Schedule identifier, if applicable c. Identification of commands that could impact spacecraft or instrument safety (i.e., critical commands)	V2.0-EOC-03 V2.0-ICT-13
EOC-3024#B	The EOC shall validate the expected resource	V2.0-EOC-03

	usage.	
EOC-3030#A	The EOC shall authenticate the originator of command information from the ICCs.	V1-EOC-03 V1-ICT-13
EOC-3030#B	The EOC shall authenticate the originator of command information from the ICCs.	V2.0-EOC-03 V2.0-ICT-13
EOC-3050#A	At least once per day, the EOC shall generate SCC-stored spacecraft commands and SCC-stored spacecraft tables based on the detailed activity schedule.	V1-EOC-03
EOC-3050#B	At least once per day, the EOC shall generate SCC-stored spacecraft commands and SCC-stored spacecraft tables based on the detailed activity schedule.	V2.0-EOC-03
EOC-3070#B	The EOC shall generate SCC-stored spacecraft commands and SCC-stored spacecraft tables for 24 hours of spacecraft operations in less than 1 hour.	V2.0-EOC-03
EOC-3080#A	The EOC shall generate, validate, and store preplanned spacecraft commands for later use in emergency situations to protect the health and safety of the spacecraft.	V1-EOC-02
EOC-3080#B	The EOC shall generate, validate, and store preplanned spacecraft commands for later use in emergency situations to protect the health and safety of the spacecraft.	V2.0-EOC-02
EOC-3086#B	The EOC shall generate a command-to-memory location map for SCC-stored command loads.	V2.0-EOC-03
EOC-3090#A	As frequently as necessitated by the detailed activity schedule, the EOC shall build a spacecraft and instrument memory load, which includes as many of the following as needed: a. SCC-stored spacecraft and instrument commands b. SCC-stored spacecraft and instrument tables c. Instrument loads d. SCC software updates.	V1-EOC-03

EOC-3090#B		V2.0-EOC-03
	As frequently as necessitated by the detailed activity schedule, the EOC shall build a spacecraft and instrument memory load, which includes as many of the following as needed: a. SCC-stored spacecraft and instrument commands b. SCC-stored spacecraft and instrument tables c. Instrument loads d. SCC software updates.	
EOC-3160#A	The EOC shall generate operational reports.	V1-EOC-03
EOC-3160#B	The EOC shall generate operational reports including, at a minimum, the following: a. SCC-stored command load report b. Integrated report having orbital events, command execution times, and TDRS contacts with candidate loads.	V2.0-EOC-03
EOC-3200#B	The EOC shall accept from the ICC instrument preplanned command groups for issuance by the EOC in the event of an anomaly that requires an immediate responseor in the event that the ICC is unable to command the instrument.	V2.0-EOC-03 V2.0-ICT-13
EOC-3210#A	The EOC shall store and maintain preplanned instrument commands for all instruments on the spacecraft.	V1-EOC-03
EOC-3210#B	The EOC shall store and maintain preplanned instrument commands for all instruments on the spacecraft.	V2.0-EOC-03
EOC-3225#B	In support of a TOO observation or late change, the EOC shall prepare the corresponding integrated load and/or real-time instrument command set within 15 minutes of receipt of the SCC-stored instrument commands, SCC-stored instrument tables, or instrument load from the ICC, if the observation does not impact previously scheduled activities.	V2.0-EOC-03 V2.0-ICT-13
EOC-3226#B	In support of a TOO observation or late change, the EOC shall prepare the corresponding integrated load and/or real-time instrument command set within 1 hour of receipt of the	V2.0-EOC-03 V2.0-ICT-13

SCC-stored instrument commands, SCC-stored instrument tables, or instrument load from the ICC, if the observation impacts previously

EOC-4015#A	The EOC shall provide the capability to build real-time commands based on operator input and validate the generated commands.	V1-EOC-02
EOC-4015#B	The EOC shall provide the capability to build real-time commands based on operator input and validate the generated commands.	V2.0-EOC-02 V2.0-ICT-13
EOC-4018#A	The EOC shall validate instrument real-time command groups.	V1-EOC-02
EOC-4018#B	The EOC shall validate instrument real-time command groups.	V2.0-EOC-02
EOC-4020#A	The EOC shall merge the real-time commands supplied by the spacecraft operator, command groups, and the spacecraft and instrument memory loads into one uplink stream.	V1-EOC-02
EOC-4020#B	The EOC shall merge the real-time commands supplied by the spacecraft operator, command groups, and the spacecraft and instrument memory loads into one uplink stream.	V2.0-EOC-02
EOC-4060#B	The EOC shall provide the capability to exchange messages with the NCC, which include at a minimum status and reconfiguration messages.	V2.0-ICT-09
EOC-4100#A	The EOC shall provide the capability to control the uplink of critical commands by requiring a second positive response from the operator.	V1-EOC-02
EOC-4100#B	The EOC shall provide the capability to control the uplink of critical commands by requiring a second positive response from the operator.	V2.0-EOC-02
EOC-4120#B	The EOC shall provide the capability to verify via telemetry the successful receipt of all commands by the spacecraft and instruments.	V2.0-EOC-02
EOC-4125#B	The EOC shall provide the capability to verify via telemetry the successful execution of spacecraft commands.	V2.0-EOC-02
EOC-4130#B		V2.0-EOC-02

	The EOC shall provide the capability to receive and evaluate command transmission status information from EDOS.	
EOC-4140#A	The EOC shall generate command-related event messages for display and for history logging to include: a. Command uplink status	V1-EOC-02
EOC-4160#B	The EOC shall maintain a record of the uplink status of all spacecraft and instrument memory loads and real-time commands.	V2.0-EOC-02
EOC-4166#B	The EOC shall provide the ICC with instrument uplink status, which includes at a minimum the following: a. Receipt at the EOC b. Validation status c. Receipt at the spacecraft and instrument	V2.0-ICT-13
EOC-4168#B	The EOC shall provide the ICCs with instrument command notification messages, when emergency/contingency instrument commands are issued.	V2.0-ICT-13
EOC-4200#A	The EOC shall support several uplink rates to the spacecraft, which include at a minimum the following: a. 10 kilobits per second (kbps) (SSA uplink) b. 1 kbps (SMA uplink) c. 125 bits per second (bps) (SSA uplink during contingency operations) d. 2 kbps (emergency operations via S-band DSN link)	V1-EOC-02
EOC-4200#B	The EOC shall support several uplink rates to the spacecraft, which include at a minimum the following: a. 10 kilobits per second (kbps) (SSA uplink) b. 1 kbps (SMA uplink) c. 125 bits per second (bps) (SSA uplink during contingency operations) d. 2 kbps (emergency operations via S-band DSN link)	V2.0-EGS-02 V2.0-EOC-02
EOC-4210#B	The EOC shall process and output a single real-	V2.0-ICT-13

	time emergency command within 500 milliseconds of receiving the request from an ICC.	
EOC-5010#A	The EOC shall receive from EDOS the following telemetry data types in CCSDS packets containing: a. Real-time spacecraft and instrument housekeeping data b. Spacecraft recorder housekeeping data c. SCC memory dump data	V1-EOC-01 V1-ICT-13
EOC-5010#B	The EOC shall receive from EDOS the following telemetry data types in CCSDS packets containing: a. Real-time spacecraft and instrument housekeeping data b. Spacecraft recorder housekeeping data c. SCC memory dump data	V2.0-EOC-01 V2.0-EOC-02
EOC-5012#B	The EOC shall be capable of processing spacecraft recorder housekeeping data for all periods of time during which real time data was not received.	V2.0-EOC-01
EOC-5015#A	The EOC shall be capable of simultaneously receiving all EOS telemetry data types.	V1-EOC-01
EOC-5015#B	The EOC shall be capable of simultaneously receiving all EOS telemetry data types.	V2.0-EOC-01
EOC-5030#B	The EOC shall provide the capability to receive and process, non-telemetry data, which includes at a minimum the following: a. Messages from the NCC b. (Deleted) c. Telemetry processing status messages from EDOS	V2.0-EGS-02 V2.0-EOC-01 V2.0-EOC-04 V2.0-ICT-09
EOC-5045#B	The EOC shall be capable of supporting all EOS telemetry formats for spacecraft and instrument housekeeping data.	V2.0-EOC-01
EOC-5050#B	The EOC shall provide the capability to receive and report data quality information with the incoming CCSDS packets as provided by EDOS.	V2.0-EOC-01
EOC-5070#A		V1-EOC-01

	The EOC shall provide the capability to detect and report gaps in the telemetry data it receives.	
EOC-5070#B	The EOC shall provide the capability to detect and report gaps in the telemetry data it receives.	V2.0-EOC-01
EOC-5080#A	The EOC shall provide the capability to decommutate spacecraft and instrument housekeeping data.	V1-EOC-01

EOC-5080#B

	number of limit violations for a parameter is detected.	
EOC-5120#B	The EOC shall provide the capability to accept temporary or permanent changes to limit definitions.	V2.0-EOC-01
EOC-5130#B	The EOC shall determine the best estimate for SCC memory contents.	V2.0-EOC-02
EOC-5180#B	The EOC shall provide the capability to extract specified subsets of the telemetry stream.	V2.0-EOC-01
EOC-5185#B	The EOC shall provide the FDF with a subset of telemetry stream, which includes the following: a. Attitude sensor data b. Navigation telemetry data c. Spacecraft maneuver telemetry data	V2.0-ICT-10
EOC-5187#B	The EOC shall have the capability to determine the spacecraft clock time bias required for synchronizing the spacecraft clock relative to Coordinated Universal Time (UTC).	V2.0-EOC-04
EOC-5190#B	The EOC shall provide the capability to store spacecraft recorder housekeeping data as they are received from EDOS in CCSDS packets.	V2.0-EOC-01
EOC-5220#B	The EOC shall be able to process real-time telemetry data at rates up to 50 kbps per spacecraft.	V2.0-EOC-01
EOC-5230#B	The EOC shall be able to receive and record spacecraft recorder housekeeping data at rates up to 1.544 Mbps.	V2.0-EOC-01
EOC-5240#B	The EOC shall be able to process history and archived spacecraft recorder housekeeping data at rates up to 150 kbps.	V2.0-EOC-01 V2.0-EOC-04
EOC-6010#A	The EOC shall provide the capability to perform analysis on real-time telemetry data and spacecraft recorder housekeeping data.	V1-EOC-04
EOC-6010#B	The EOC shall provide the capability to perform analysis on real-time telemetry data, spacecraft recorder housekeeping data, and data from the EOC history log.	V2.0-EOC-04
EOC-6020#B		V2.0-ICT-13

	The EOC shall accept instrument status data from each ICC.	
EOC-6050#A	The EOC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter e. Time and duration of limit violations	V1-EOC-04
EOC-6050#B	The EOC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter e. Time and duration of limit violations	V2.0-EOC-04
EOC-6060#A	The EOC shall provide the capability to plot a specified parameter against another parameter or against time.	V1-EOC-01
EOC-6060#B	The EOC shall provide the capability to plot a specified parameter against another parameter or against time.	V2.0-EOC-01 V2.0-EOC-04
EOC-6070#A	The EOC shall provide the capability to time-correlate related spacecraft parameters.	V1-EOC-01 V1-EOC-04
EOC-6070#B	The EOC shall provide the capability to time-correlate related spacecraft parameters.	V2.0-EOC-01 V2.0-EOC-04
EOC-6100#A	The EOC shall provide the capability to perform trend analysis on spacecraft and instrument housekeeping parameters.	V1-EOC-04
EOC-6100#B	The EOC shall provide the capability to perform trend analysis on spacecraft and instrument housekeeping parameters.	V2.0-EOC-04
EOC-6110#A	The EOC shall provide the capability to monitor and evaluate the spacecraft functions, resources, and performance including, at a minimum, the	V1-EOC-02

	following: a. Stored command processing.	
EOC-6110#B	The EOC shall provide the capability to monitor and evaluate the spacecraft functions, resources, and performance, including at a minimum the following: a. Stored command processing b. Spacecraft recorders c. Safe mode processes d. Electrical power subsystem e. Propulsion subsystem	V2.0-EOC-04
EOC-6130#B	The EOC shall monitor the configuration of the spacecraft and instruments.	V2.0-EOC-01
EOC-6140#B	The EOC shall provide the capability to maintain a record of the spacecraft and instrument configuration, including the state of all spacecraft subsystems and instruments.	V2.0-EOC-04
EOC-6150#B	The EOC shall provide the capability to maintain a master ground image of the SCC spacecraft memory.	V2.0-EOC-02
EOC-6160#B	The EOC shall provide the capability to compare the master ground image and the SCC memory dump.	V2.0-EOC-02
EOC-6195#A	The EOC shall provide the capability to detect, isolate, and report failures and anomalies at the spacecraft subsystem level, and the spacecraft level.	V1-EOC-01 V1-ICT-13
EOC-6195#B	The EOC shall provide the capability to detect, isolate, and report failures and anomalies at the spacecraft subsystem level, and the spacecraft level.	V2.0-EOC-01 V2.0-EOC-04
EOC-7015#A	The EOC shall receive from the ICCs instrument-specific portion of the PDB and/or any updates thereto.	V1-ICT-13
EOC-7015#B	The EOC shall receive from the ICCs instrument-specific portion of the PDB and/or any updates	V2.0-ICT-13

	thereto.	
EOC-7060#A	The EOC shall maintain a history log for the spacecraft and instruments for the most recent 7 days, including at a minimum the following: a. All messages sent and received b. Telemetry data c. Operator requests/directives d. Real-time commands e. Stored command loads f. Memory loads and dumps g. Limits violations h. Error conditions i. Warnings k. Spacecraft and instrument status information l. Executed schedules m. Analysis results n. Responses to operator requests o. User interface language procedures as they were executed p. EOC reconfiguration information q. Master ground image	V1-EOC-04
EOC-7120#A	The EOC shall be capable of extracting data sets from the history log by specifying time and data type to include as a minimum: telemetry, command, non-telemetry messages, operator directives, events, or limits violations.	V1-EOC-04
EOC-7120#B	The EOC shall be capable of extracting data sets from the history log by specifying time and data type to include as a minimum: telemetry, command, non-telemetry messages, operator directives, events, or limits violations.	V2.0-EOC-04
EOC-8100#B	The EOC shall perform prepass operational readiness tests on the EOC and between the EOC and external interfaces (via test messages).	V2.0-ICT-09
EOC-8130#A	The EOC shall allow operator override for reconfiguration requests that violate operational constraints.	V1-EOC-02
EOC-8130#B	The EOC shall allow operator override for reconfiguration requests that violate operational	V2.0-EOC-02

	constraints.	
EOC-8140#A	The EOC shall manage initialization and shutdown of EOC functions.	V1-EOC-05
EOC-8140#B	The EOC shall manage initialization and shutdown of EOC functions.	V2.0-EOC-05
EOC-8160#B	The EOC shall alert the operator when its status changes or when data errors exceed operator-specified levels.	V2.0-EOC-05
EOC-8220#B	The EOC shall manage its faults including at a minimum the following: a. Fault identification and reporting b. Identification of recommended solutions c. Log of fault activities through resolution	V2.0-EOC-05
EOC-8240#B	The EOC shall be capable of initiating diagnostics to aid in isolating internal faults, using safeguards to prevent their operations from affecting other operations.	V2.0-EOC-05
EOC-8285#A	The EOC shall support instrument integration activities associated with the spacecraft prior to launch.	V1-ICT-13
EOC-9010#A	The EOC shall provide the capability for the operator to control the EOC functions and components, utilizing a combination of input devices.	V1-EOC-05 V1-ICT-13
EOC-9010#B	The EOC shall provide the capability for the operator to control the EOC functions and components, utilizing a combination of input devices.	V2.0-EOC-05
EOC-9020#A	The EOC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each EOC function.	V1-EOC-05
EOC-9020#B	The EOC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system	V2.0-EOC-05

	information used or generated by each EOC function.	
EOC-9025#A	The EOC shall provide the capability to notify the operator of events and alarms.	V1-EOC-01 V1-EOC-02 V1-EOC-05 V1-ICT-13
EOC-9080#A	The EOC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V1-EOC-02
EOC-9080#B	The EOC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V2.0-EOC-02 V2.0-EOC-05
EOC-9110#A	The EOC shall respond to operator inputs within 0.5 seconds.	V1-EOC-02 V1-EOC-05
EOC-9110#B	The EOC shall respond to operator inputs within 0.5 seconds.	V2.0-EOC-05
EOSD0015#B	ECS shall use and support the AGS, SGS, and the Wallops Orbital Tracking Station (WOTS), via the EDOS/EBnet interface, as backup of the SN, to obtain forward and return link data communications.	V2.0-EGS-02
EOSD0020	ECS shall use and support the EDOS/EBnet interface to obtain the data capture, data archival, and data distribution services needed to achieve full end-to-end ECS functionality.	V1-TST-03
EOSD0020#B	ECS shall use and support the EDOS/EBnet interface to obtain the data capture, data archival, and data distribution services needed to achieve full end-to-end ECS functionality.	V2.0-SFQ-01
EOSD0030	ECS shall, during its lifetime, ingest, archive distribute and provide search and access for EOS TRMM, Landsat 7 (including IGS metadata and browse) and related non-EOS data and products.	V1-TST-01 V1-TST-03
EOSD0560	ECS benchmark tests and test data sets shall be defined for system verification and data quality evaluation.	V1-TST-01
EOSD0720#B	Each ECS element shall be able to validate at any	V2.0-SFQ-02

	time during the life-time of the ECS that the ECS element primary functional performance is consistent with pre-defined operational benchmark tests.	
EOSD0740	Each ECS element shall provide a set of real or simulated functional capabilities for use in the following types of test: a. Subsystem (components of an ECS element) b. Element (fully integrated element) c. ECS System (Integration of ECS elements)	V1-TST-01
EOSD0750	Each ECS element shall provide a set of real or simulated functions which interfaces with both its ECS internal and external entities for use in the following types of test: a. Subsystem (components of an ECS element) b. Element (fully integrated element) c. EOSDIS System (Integration of EOSDIS elements)	V1-TST-01 V1-TST-03
EOSD0760	Each ECS element shall support end-to-end EOS system testing and fault isolation.	V1-TST-01
EOSD1010	ECS shall support daily data volume, processing load, storage volume, instrument support, and data traffic as derivable from and specified in Appendix C and D.	V1-TST-01
EOSD1010#B	ECS shall support daily data volume, processing load, storage volume, instrument support, and data traffic as derivable from and specified in Appendix C and D.	V2.0-SFQ-01 V2.0-SFQ-02
EOSD1500#B	ECS shall interface with the EOS spacecraft and with the EOS instruments in order to perform mission operations, including planning, scheduling, commanding, and monitoring functions.	V2.0-ICT-13
EOSD1502	ECS elements shall use EBnet for data communications for the following types of data: a. Production data sets (Level 0 data) b. Expedited data sets c. Real-time data (for health and safety) d. Command data e. Data requested from back-up archive f. TDRSS schedule requests g. Data exchange with the FDF h. Production Data Transfers between DAACs i. Management Data exchange with SMC j. Data Products Exchange with ADCs, IPs, and Others	V1-TST-01 V1-TST-03

EOSD1502#B	ECS elements shall use EBnet for data communications for the following types of data: a. Production data sets (Level 0 data) b. Expedited data sets c. Real-time data (for health and safety) d. Command data e. Data requested from back-up archive f. TDRSS schedule requests g. Data exchange with the FDF h. Production Data Transfers between DAACs i. Management Data exchange with SMC j. Data Products Exchange with ADCs, IPs, and Others	V2.0-ICT-10 V2.0-SFQ-01
EOSD1505#B	ECS elements shall receive EOS spacecraft predicted orbit data and post pass ephemeris determination data from the FDF.	V2.0-ICT-10
EOSD1510#B	ECS elements shall provide the FDF with subsets of spacecraft housekeeping data related to the on-board attitude and orbit systems.	V2.0-ICT-10
EOSD1520#B	ECS elements shall receive TDRSS schedules from the Network Control Center (NCC).	V2.0-EOC-03 V2.0-ICT-09
EOSD1530#B	ECS elements shall submit TDRSS schedule requests to the NCC.	V2.0-EOC-03 V2.0-ICT-09
EOSD1607	ECS shall receive data from near term Earth Probe missions to include the following as a minimum: a). TRMM data for archive and distribution b). Landsat 7 data for archive and distribution including IGS metadata and browse.	V1-TST-01 V1-TST-03
EOSD1607#B	ECS shall receive data from near term Earth Probe missions to include the following as a minimum: a). (Deleted) b). Landsat 7 data for archive and distribution including IGS metadata and browse.	V2.0-SFQ-01
EOSD1608	ECS elements shall receive from EPDSs the following at a minimum: a. Data products b. Ancillary data c. Calibration data d. Correlative	V1-TST-01 V1-TST-03

	data e. Metadata f. Data information g. Documentation	
EOSD1695#B	The ECS shall provide 2-way interoperability with the V0 system.	V2.0-SFQ-05
EOSD1703	ECS shall provide maintenance and operations interfaces to the DAACs to support the functions of: a). System Management b). Science Algorithm Integration c). Product Generation d). Data Archive/Distribution e). User Support Services f). System Maintenance	V1-TST-01 V1-TST-03
EOSD1710#B	ECS elements shall exchange with ADCs/ODCs, such as NOAA and other data processing and archiving facilities, information including the following: a. Directories b. Product Orders c. Order Status d. Science Data e. Management Data	V2.0-ICT-05
EOSD1740#B	ECS elements shall send the following types of data at a minimum to the ECS user community: a. Metadata b. Browse data c. Science data	V2.0-SFQ-05
EOSD2430#B	Data base access and manipulation shall accommodate control of user access and update of security controlled data.	V2.0-EGS-07
EOSD2440	Data base integrity including prevention of data loss and corruption shall be maintained.	V1-TST-03
EOSD2440#B	Data base integrity including prevention of data loss and corruption shall be maintained.	V2.0-EGS-07 V2.0-SFQ-04
EOSD2510#B	ECS elements shall maintain an audit trail of: a. All accesses to the element security controlled data b. Users/processes/elements requesting access to element security controlled data c. Data access/manipulation operations performed	V2.0-EGS-07 V2.0-SFQ-04

	on security controlled data d. Date and time of access to security controlled data e. Unsuccessful access attempt to the element security controlled data by unauthorized users/elements/processes f. Detected computer system viruses and worms g. Actions taken to contain or destroy a virus	
EOSD2550#B	The ECS elements shall limit use of master passwords or use of a single password for large organizations requiring access to a mix of security controlled and non-sensitive data.	V2.0-EGS-07
EOSD2990	The ECS elements shall support the recovery from a system failure due to a loss in the integrity of the ECS data or a catastrophic violation of the security system.	V1-TST-01
EOSD2990#B	The ECS elements shall support the recovery from a system failure due to a loss in the integrity of the ECS data or a catastrophic violation of the security system.	V2.0-EGS-07 V2.0-SFQ-04
EOSD3000	The ECS shall provide for security safeguards to cover unscheduled system shutdown (aborts) and subsequent restarts, as well as for scheduled system shutdown and operational startup.	V1-TST-01
EOSD3000#B	The ECS shall provide for security safeguards to cover unscheduled system shutdown (aborts) and subsequent restarts, as well as for scheduled system shutdown and operational startup.	V2.0-EGS-07 V2.0-SFQ-04
EOSD3200	A minimum of one backup which is maintained in a separate physical location (i.e., different building) shall be maintained for ECS software and key data items (including security audit trails and logs).	V1-TST-01
EOSD3200#B	A minimum of one backup which is maintained in a separate physical location (i.e., different building) shall be maintained for ECS software and key data items (including security audit trails and logs).	V2.0-EGS-07

EOSD3220	All media shall be handled and stored in protected areas with environmental and accounting procedures applied.	V1-TST-01
EOSD3220#B	All media shall be handled and stored in protected areas with environmental and accounting procedures applied.	V2.0-EGS-07 V2.0-SFQ-01
EOSD3710#B	The ECS shall have no single point of failure for functions associated with real-time operations of the spacecraft and instruments.	V2.0-EGS-07 V2.0-SFQ-01
EOSD3910#B	The switchover time from the primary science data receipt capability to a backup capability shall be 15 minutes or less (10 minutes design goal).	V2.0-SFQ-01
EOSD4035#B	The ESN shall have no single point of failure for functions associated with site-specific network databases and configuration data.	V2.0-SFQ-04
EOSD5000#B	ECS shall enable the addition of other data providers, e.g. DAACs, SCFs, ADCs, ODCs, which may: - provide heterogeneous services, i.e. services in support of EOS which may be less than or different than ECS services. - be connected with varying topologies - have variable levels of reliability or operational availability.	V2.0-ICT-05
ESN-0070#B	The ESN shall support the intrasite elements data flow requirements identified in this specification.	V2.0-SFQ-01 V2.0-SFQ-02
ESN-0280#B	The ESN shall provide file transfer and management service and as a minimum shall include the capability to transfer the following data types: a. Unstructured Text b. Binary Unstructured c. Binary Sequential d. Sequential Text	V2.0-SFQ-03
ESN-0290#B	The file transfer and management service shall be available in interactive and non-interactive	V2.0-SFQ-01 V2.0-SFQ-03

	services.	
ESN-0300#B	The file transfer and management non-interactive services shall be able to be scheduled.	V2.0-SFQ-01
ESN-0300#B	The file transfer and management non-interactive services shall be able to be scheduled.	V2.0-SFQ-03
ESN-0450#B	The ESN shall provide process-to-process communication service.	V2.0-SFQ-01
ESN-0490#B	The ESN shall provide a name-to-attribute mapping Directory Service at a minimum.	V2.0-SFQ-04
ESN-0510#B	The directory function shall be able to respond to requests for information concerning named objects, either physical or logical, so as to support communications with those objects.	V2.0-SFQ-04
ESN-0610#B	The ESN shall include multiple Directory Service Agents (DSAs) which shall be collectively responsible for holding or retrieving all directory information which is needed by ECS.	V2.0-SFQ-04
ESN-0620#B	The ESN shall include a network management function to monitor and control the ESN.	V2.0-SFQ-01
ESN-0640#B	The ESN shall include management functions at each ECS element, equipment or gateway within the ESN.	V2.0-SFQ-01
ESN-0650#B	The ESN shall perform the following network management functions for each protocol stack implemented in any ECS element, and each communications facility: a. Network Configuration Management b. Network Fault Management c. Network Performance Management d. Network Security Management	V2.0-EGS-07
ESN-0830#B	The ESN shall have the capability to detect and report communications related errors and events both locally and at the SMC.	V2.0-SFQ-01
ESN-0840#B	The ESN shall have error reporting, event logging	V2.0-SFQ-01

	and generation of alerts.	
ESN-0900#B	Errors and events to be detected shall include at least: a. communications software version or configuration errors b. communications hardware errors c. protocol errors d. performance degradation conditions e. telecommunications errors and failures	V2.0-SFQ-01
ESN-0920#B	The ESN shall provide a set of utilities to perform diagnostic and testing functions for purposes of fault isolation.	V2.0-SFQ-01
ESN-1140#B	The ESN shall provide protocol translation, termination, bridging and routing.	V2.0-SFQ-01
ESN-1170#B	The ESN shall provide necessary translation within supported file transfer and e-mail services.	V2.0-SFQ-01
ESN-1180#B	The ESN shall interoperate with NSI to provide user access to ECS.	V2.0-SFQ-03
ESN-1206#B	The ESN capacity and performance shall be consistent with the specified capacity and performance requirements of the ECS functions.	V2.0-SFQ-01
ESN-1340#B	The ESN shall provide support for TCP/IP communications protocols and services to external interfaces as required by the IRDs.	V2.0-SFQ-01
ESN-1350#B	The ESN LANs shall provide physical devices and the corresponding medium access control (MAC) protocol compatible with ISO and ANSI standards.	V2.0-SFQ-01
ESN-1365#B	The ESN shall isolate FOS with secure interfaces.	V2.0-EGS-07
ESN-1380#B	The ESN shall provide countermeasures for the following security threats related to data communications: a. modification of data (i.e., manipulation) while in transit over the network b. disclosure of authentication information	V2.0-EGS-07 V2.0-SFQ-04

	c. degradation in network or processing resource performance through denial of service attack d. Impersonation of authentication credentials or authorization privileges.	
ESN-1400#B	The following security functions and services, at a minimum, shall be provided: a. authentication b. access (authorization) control c. data integrity d. data confidentiality	V2.0-EGS-07
ESN-1430#B	The ESN shall provide the following security event functions: a. Event detection b. Event reporting c. Event logging	V2.0-EGS-07
FOS-0020#B	The FOS shall provide a training mode of operation for use during operator training and/or user training that does not interfere with ongoing operations.	V2.0-EOC-05
FOS-0025#B	The FOS shall provide a test mode of operation that does not interfere with ongoing operations, and which supports independent element and subsystem tests, end-to-end tests, and integration and verification activities occurring during at a minimum: a. Spacecraft and instrument integration and test b. Pre-launch c. Upgrades and enhancements	V2.0-EOC-05
FOS-0040#B	The FOS shall be capable of supporting flight operations of the EOS spacecraft and instruments as listed in Table D-1 that are controlled from GSFC.	V2.0-ICT-14
FOS-1130#B	The FOS shall check the binary pattern of all outgoing commands against a user-defined, configuration controlled table and halt transmission whenever a match is found.	V2.0-EOC-02
ICC-0010#B	The GSFC ICC shall be responsible for planning, scheduling, commanding, and monitoring the instruments allocated to GSFC in Table D-1,	V2.0-ICT-13

	Instrument Manifest.	
ICC-0020#B	The ICC shall be capable of interfacing with one or more local and/or remote ISTs for the instrument supported by the ICC.	V2.0-ICT-13
ICC-0030#A	The ICC shall have the capability to notify the TL or instrument PI at the IST of, at a minimum, the following: a. Conflicts found in planning and scheduling.	V1-ICT-13
ICC-0030#B	The ICC shall have the capability to notify the TL or instrument PI at the IST of, at a minimum, the following: a. Conflicts found in planning and scheduling b. Arrival of instrument engineering data c. Instrument anomalies found during instrument monitoring	V2.0-ICT-13
ICC-0055#B	The ICC shall interface with EDOS for coordinating EDOS-provided services (e.g., data delivery service messages, status).	V2.0-ICT-13
ICC-0070#B	The ICC shall be capable of accommodating instrument team-provided software and/or hardware to perform functions such as: a. Planning b. Scheduling c. Analysis d. Onboard microprocessor management	V2.0-ICT-13
ICC-1130#B	In support of a TOO observation, the ICC shall be able to evaluate the corresponding request within 30 minutes.	V2.0-ICT-13
ICC-2010#A	The ICC shall have the capability to access the EOC planning and scheduling information.	V1-ICT-13
ICC-2010#B	The ICC shall have the capability to access the EOC planning and scheduling information.	V2.0-ICT-13
ICC-2015#B	The ICC shall have the capability to access and execute EOC "what-if" functions for planning and scheduling analysis.	V2.0-ICT-13

ICC-2050#A	The ICC shall identify and resolve instrument planning and scheduling conflicts of its instrument based on, at a minimum, the following: a. Resource and time constraints b. In situ observation dependency c. Coordinated observation dependency among instruments d. Priorities set by the LTSP and LTIP	V1-ICT-13
ICC-2050#B	The ICC shall identify and resolve instrument planning and scheduling conflicts of its instrument based on, at a minimum, the following: a. Resource and time constraints b. In situ observation dependency c. Coordinated observation dependency among instruments d. Priorities set by the LTSP and LTIP	V2.0-ICT-13
ICC-2052#B	The ICC shall generate the instrument baseline activity profiles, based upon the LTIPs for the applicable instrument.	V2.0-ICT-13
ICC-2060#B	The ICC shall reintroduce applicable requested activities in its planning and scheduling function when the activity did not occur due to a deviation from the schedule.	V2.0-ICT-13
ICC-2110#B	The ICC shall be capable of converting PI/TL provided instrument deviation requests into scheduling directives suitable for inclusion in its instrument resource profile.	V2.0-ICT-13
ICC-2115#A	The ICC shall have the capability to plan and schedule instrument maintenance activities.	V1-ICT-13
ICC-2115#B	The ICC shall have the capability to plan and schedule instrument maintenance activities.	V2.0-ICT-13
ICC-2140#A	At least once each week, the ICC shall build an instrument resource profile or an instrument resource deviation list (when a baseline resource profile exists for the instrument), which includes a description of	V1-ICT-13

	instrument operations currently planned for the target week.	
ICC-2140#B	At least once each week, the ICC shall build an instrument resource profile or an instrument resource deviation list (when a baseline resource profile exists for the instrument), which includes a description of instrument operations currently planned for the target week.	V2.0-ICT-13
ICC-2150#A	The ICC shall accept from the EOC a notification of rejection of its instrument activities proposed in the instrument resource profile or instrument resource deviation list.	V1-ICT-13
ICC-2150#B	The ICC shall accept from the EOC a notification of rejection of its instrument activities proposed in the instrument resource profile or instrument resource deviation list.	V2.0-ICT-13
ICC-2190#A	The ICC shall build or update its instrument resource profile, or when a resource profile exists, its instrument resource deviation list, based, at a minimum, on the following: a. PI/TL provided instrument deviation requests b. LTSP and LTIP c. Current resource availability d. Current predicted orbit data and related information	V1-ICT-13
ICC-2190#B	The ICC shall build or update its instrument resource profile, or when a resource profile exists, its instrument resource deviation list, based, at a minimum, on the following: a. PI/TL provided instrument deviation requests b. LTSP and LTIP c. Current resource availability d. Current predicted orbit data and related information e. Rejection notification from the EOC of activities that can not be accommodated in the preliminary resource	V2.0-ICT-13

	schedule f. Existing preliminary resource schedule	
ICC-2210#A	The ICC shall ensure that its instrument resource profile contains no internal conflicts.	V1-ICT-13
ICC-2210#B	The ICC shall ensure that its instrument resource profile contains no internal conflicts.	V2.0-ICT-13
ICC-2220#A	The ICC shall be able to generate the instrument resource profile in both machine usable and human readable forms.	V1-ICT-13
ICC-2220#B	The ICC shall be able to generate the instrument resource profile in both machine usable and human readable forms.	V2.0-ICT-13
ICC-2230#A	When generated, the ICC shall provide the EOC with its instrument resource profile or, when a resource profile exists, an instrument resource deviation list.	V1-ICT-13
ICC-2230#B	When generated, the ICC shall provide the EOC with its instrument resource profile or, when a resource profile exists, an instrument resource deviation list.	V2.0-ICT-13
ICC-2250#A	The ICC shall accept the preliminary resource schedule from the EOC.	V1-ICT-13
ICC-2250#B	The ICC shall accept the preliminary resource schedule from the EOC.	V2.0-ICT-13
ICC-2270#A	For each day the ICC shall be capable of generating or updating, an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) nominally covering the next 7 days.	V1-ICT-13
ICC-2270#B	For each day the ICC shall be capable of generating or updating, an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) nominally	V2.0-ICT-13

	covering the next 7 days.	
ICC-2280#A	The ICC shall generate or update the instrument activity list, or when a baseline activity profile exists, the instrument activity deviation list, based, at a minimum, on the following: a. PI/TL provided instrument deviation requests. b. LTSP and LTIP c. Preliminary resource schedule d. Current resource availability information e. Current predicted orbit data and related information f. Responses to contingency/emergency conditions g. Rejection notification from the EOC of the activities that cannot be accommodated in the detailed activity schedule	V1-ICT-13
ICC-2280#B	The ICC shall generate or update the instrument activity list, or when a baseline activity profile exists, the instrument activity deviation list, based, at a minimum, on the following: a. PI/TL provided instrument deviation requests. b. LTSP and LTIP c. Preliminary resource schedule d. Current resource availability information e. Current predicted orbit data and related information f. Responses to contingency/emergency conditions g. Rejection notification from the EOC of the activities that cannot be accommodated in the detailed activity schedule	V2.0-ICT-13
ICC-2290#A	The ICC shall generate the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) in both machine-usable and human-readable forms, to describe for each activity, at a minimum, as many of the following that apply: a. Activity identifier including traceability to PI/TL provided deviation requests. b. Objectives c. Resource requirements	V1-ICT-13

	d. Start time constraints and duration e. Instrument modes as a function of time f. Pointing angles and field of view (FOV) g. Specified tolerance limits h. Disturbances caused for each instrument mode	
ICC-2290#B	The ICC shall generate the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) in both machine- usable and human-readable forms, to describe for each activity, at a minimum, as many of the following that apply: a. Activity identifier including traceability to PI/TL provided deviation requests. b. Objectives c. Resource requirements d. Start time constraints and duration e. Instrument modes as a function of time f. Pointing angles and field of view (FOV) g. Specified tolerance limits h. Disturbances caused for each instrument mode	V2.0-ICT-13
ICC-2300#A	The ICC shall accept from the EOC a notification of rejection of instrument activities.	V1-ICT-13
ICC-2300#B	The ICC shall accept from the EOC a notification of rejection of instrument activities.	V2.0-ICT-13
ICC-2350#B	In support of a TOO observation or a late change, the ICC shall update the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) within 8 hours, if the corresponding observation or the late change affects existing instrument activities or creates new conflicts.	V2.0-EOC-03 V2.0-ICT-13
ICC-2370#B	In support of a TOO observation, the ICC shall update the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) within 30 minutes, if the corresponding observation or the late change does not affect existing instrument activities or create new conflicts.	V2.0-EOC-03 V2.0-ICT-13
ICC-2380#B		V2.0-EOC-03

	In support of a late change, the ICC shall be capable of updating the instrument activity list within 75 minutes, if the request for instrument support activity does not affect existing instrument activity list events or create new conflicts.	V2.0-ICT-13
ICC-2390#A	The ICC shall provide the EOC with the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto, when generated.	V1-ICT-13
ICC-2390#B	The ICC shall provide the EOC with the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto, when generated.	V2.0-ICT-13
ICC-2400#A	The ICC shall have the capability to update the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) in response to instrument malfunctions or other special events that affect the continuation of the existing schedule.	V1-ICT-13
ICC-2400#B	The ICC shall have the capability to update the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) in response to instrument malfunctions or other special events that affect the continuation of the existing schedule.	V2.0-ICT-13
ICC-3010#A	The ICC shall validate SCC-stored instrument tables, as appropriate, that are generated at the ICC.	V1-ICT-13
ICC-3010#B	The ICC shall validate instrument loads, SCC-stored instrument commands, and/or SCC-stored instrument tables, as appropriate, that are generated at the ICC.	V2.0-ICT-13
ICC-3020#B	The ICC shall accept the detailed activity schedule or its updates from the EOC.	V2.0-ICT-13
ICC-3040#A		V1-ICT-13

	The ICC shall be capable of generating, at least once each day, instrument loads, SCC-stored instrument commands based on the detailed activity schedule.	
ICC-3040#B	The ICC shall be capable of generating, at least once each day, instrument loads, SCC-stored instrument commands, and/or SCC-stored instrument tables based on the detailed activity schedule.	V2.0-ICT-13
ICC-3050#B	The ICC shall be able to generate a command-to-memory location map for instrument-stored command loads.	V2.0-ICT-13
ICC-3060#B	The ICC shall generate and validate, in less than 1 hour, the instrument loads, SCC-stored instrument commands, and/or SCC-stored instrument tables for 24 hours of operation of its instrument.	V2.0-ICT-13
ICC-3070#B	In support of a TOO observation or late change, the ICC shall generate and validate the corresponding commands within 25 minutes of receiving an updated detailed activity schedule from the EOC, if the corresponding observation does not impact previously scheduled activities.	V2.0-EOC-03 V2.0-ICT-13
ICC-3071#B	In support of a TOO observation, the ICC shall be capable of generating and validating the corresponding commands within 55 minutes of receiving an updated detailed activity schedule from the EOC, if the corresponding observation impacts previously scheduled activities.	V2.0-EOC-03 V2.0-ICT-13
ICC-3085#B	In support of a late change, the ICC shall be capable of generating and validating the corresponding commands within 115 minutes of receiving an updated detailed activity schedule from the EOC, if the corresponding activity impacts previously scheduled activities.	V2.0-EOC-03 V2.0-ICT-13
ICC-3090#A	The ICC shall generate, validate, and store, as command groups, preplanned instrument commands for later use in emergency situations to protect the health and safety of its instrument.	V1-ICT-13

ICC-3090#B	The ICC shall generate, validate, and store, as command groups, preplanned instrument commands for later use in emergency situations to protect the health and safety of its instrument.	V2.0-ICT-13
ICC-3100#A	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to support specific TOO observations.	V1-ICT-13
ICC-3100#B	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to support specific TOO observations.	V2.0-ICT-13
ICC-3110#A	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to be used in event of instrument anomalies.	V1-ICT-13
ICC-3110#B	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to be used in event of instrument anomalies.	V2.0-ICT-13
ICC-3210#A	The ICC shall provide the EOC with instrument loads, SCC-stored instrument commands, SCC-stored instrument tables, preplanned real-time instrument commands, and associated information that includes, at a minimum, the following: a. Instrument identifier b. Schedule identifier, if applicable c. Critical command information	V1-ICT-13
ICC-3210#B	The ICC shall provide the EOC with instrument loads, SCC-stored instrument commands, SCC-stored instrument tables, preplanned real-time instrument commands, and associated information that includes, at a minimum, the following: a. Instrument identifier b. Schedule identifier, if applicable c. Critical command information	V2.0-ICT-13
ICC-3230#B	The ICC shall evaluate a command request from	V2.0-ICT-13

	the IST against the current detailed activity schedule to determine whether it can be met with the corresponding commands without impacting previously scheduled activities.	
ICC-3270#A	The ICC shall be able to generate and validate emergency/contingency instrument command groups in emergency/contingency situations.	V1-ICT-13
ICC-3270#B	The ICC shall be able to generate and validate emergency/contingency instrument command groups in emergency/contingency situations.	V2.0-ICT-13
ICC-3370#B	The ICC shall provide the capability to verify the successful receipt and execution of instrument commands.	V2.0-ICT-13
ICC-4020#A	The ICC shall provide the capability to accept CCSDS packets from EDOS containing at a minimum the following data types: a. Spacecraft and instrument housekeeping data b. Instrument engineering data or instrument science data within which instrument engineering data is embedded c. Instrument memory dump data	V1-ICT-13
ICC-4020#B	The ICC shall provide the capability to accept CCSDS packets from EDOS containing at a minimum the following data types: a. Spacecraft and instrument housekeeping data b. Instrument engineering data or instrument science data within which instrument engineering data is embedded c. Instrument memory dump data	V2.0-ICT-13
ICC-4045#A	The ICC shall provide the capability to extract instrument housekeeping data and relevant spacecraft parameters from the spacecraft and instrument housekeeping data stream.	V1-ICT-13
ICC-4045#B	The ICC shall provide the capability to extract instrument housekeeping data and relevant spacecraft parameters from the spacecraft and instrument housekeeping data	V2.0-ICT-13

	stream.	
ICC-4050#B	The ICC shall be capable of extracting instrument engineering data from instrument science data.	V2.0-ICT-13
ICC-4060#B	The ICC shall support all EOS telemetry formats for instrument engineering data.	V2.0-ICT-13
ICC-4070#B	The ICC shall provide the capability to receive and report data quality information with the incoming CCSDS packets as provided by EDOS.	V2.0-ICT-13
ICC-4090#A	The ICC shall provide the capability to detect and report gaps in the telemetry data it receives.	V1-ICT-13
ICC-4090#B	The ICC shall provide the capability to detect and report gaps in the telemetry data it receives.	V2.0-ICT-13
ICC-4095#B	The ICC shall provide the capability to receive and process, non-telemetry data, which includes at a minimum the following: a. Monitor blocks from the DSN, GN, and WOTS b. Status messages from EDOS	V2.0-ICT-13
ICC-4100#A	The ICC shall have the capability to perform instrument housekeeping and engineering data processing, which include: a. Decommutation b. Engineering unit conversion c. Limit checking, flagging out-of-limit parameters	V1-ICT-13
ICC-4100#B	The ICC shall have the capability to perform instrument housekeeping and engineering data processing, which include: a. Decommutation b. Engineering unit conversion c. Limit checking, flagging out-of-limit parameters d. Derived parameter generation e. Digital and discrete state determination	V2.0-ICT-13
ICC-4110#B	The ICC shall support the definition of multiple	V2.0-ICT-13

	boundary limits for each non-discrete parameter, with each set including definitions for one or more upper and lower boundaries.	
ICC-4120#B	The ICC shall provide the capability to accept temporary or permanent changes to limit definitions.	V2.0-ICT-13
ICC-4130#B	The ICC shall have the capability to continuously process instrument housekeeping and engineering data in real time as it is being received.	V2.0-ICT-13
ICC-4150#A	The ICC shall have the capability to provide event messages whenever a predetermined number of limit violations for a parameter is detected.	V1-ICT-13
ICC-4150#B	The ICC shall have the capability to provide event messages whenever a predetermined number of limit violations for a parameter is detected.	V2.0-ICT-13
ICC-4170#B	The ICC shall provide the capability to determine the best estimate for instrument memory contents.	V2.0-ICT-13
ICC-4410#A	The ICC shall provide the capability to perform analysis on real-time data, spacecraft recorder data, and data from the ICC history log.	V1-ICT-13
ICC-4410#B	The ICC shall provide the capability to perform analysis on real-time data, spacecraft recorder data, and data from the ICC history log.	V2.0-ICT-13
ICC-4420#B	The ICC shall receive spacecraft status data from the EOC.	V2.0-ICT-13
ICC-4440#B	The ICC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value	V2.0-ICT-13

	d. Standard deviation of the parameter e. Time and duration of limit violations	
ICC-4450#A	The ICC shall provide the capability to plot specified parameters against other specified parameters or against time.	V1-ICT-13
ICC-4450#B	The ICC shall provide the capability to plot specified parameters against other specified parameters or against time.	V2.0-ICT-13
ICC-4460#A	The ICC shall provide the capability to time-correlate related instrument parameters.	V1-ICT-13
ICC-4460#B	The ICC shall provide the capability to time-correlate related instrument parameters.	V2.0-ICT-13
ICC-4470#A	The ICC shall provide the capability to define, check, and manage instrument-specific operations procedures.	V1-ICT-13
ICC-4470#B	The ICC shall provide the capability to define, check, and manage instrument-specific operations procedures.	V2.0-ICT-13
ICC-4480#B	The ICC shall have the capability to monitor and evaluate instrument environmental parameters.	V2.0-ICT-13
ICC-4490#A	The ICC shall provide the capability for trend analysis of instrument parameters.	V1-ICT-13
ICC-4490#B	The ICC shall provide the capability for trend analysis of instrument parameters.	V2.0-ICT-13
ICC-4500#B	The ICC shall provide the capability to generate instrument performance data based on the processing of instrument housekeeping data and instrument engineering data.	V2.0-ICT-13
ICC-4510#B	The ICC shall have the capability to generate instrument status data based on instrument performance data and instrument anomaly data.	V2.0-ICT-13
ICC-4540#B	The ICC shall monitor the configuration of the	V2.0-ICT-13

	instrument.	
ICC-4545#B	The ICC shall have the capability to recommend instrument reconfigurations.	V2.0-ICT-13
ICC-4560#A	The ICC shall maintain a record of the instrument configuration, including the state of instrument subsystems.	V1-ICT-13
ICC-4560#B	The ICC shall maintain a record of the instrument configuration, including the state of instrument subsystems.	V2.0-ICT-13
ICC-4570#B	The ICC shall provide the capability to maintain a master ground image of the instrument memory.	V2.0-ICT-13
ICC-4580#B	The ICC shall provide the capability to compare the master ground image and the instrument memory dump.	V2.0-ICT-13
ICC-4590#B	The ICC shall provide the capability to detect, isolate, and resolve instrument failures and anomalies.	V2.0-ICT-13
ICC-4600#B	The ICC shall accept from the IST at a minumum the following: a. Instrument anomaly notifications and instructions b. PI/TL analysis results c. Calibration information d. Performance data	V2.0-ICT-13
ICC-4710#A	The ICC Instrument Data Base (IDB) shall include at a minimum the following: a. Instrument housekeeping data formats b. Instrument engineering data formats c. Housekeeping and engineering parameter descriptions d. Command descriptions e. Syntactical rules for commands and operator directives f. Operator directives g. Display formats h. Planning and scheduling definitions and constraints i. Analysis algorithms	V1-ICT-13

	j. Report formats k. Derived telemetry parameter equations l. Parameter limits m. Instrument characteristics n. Command validation parameters	
ICC-4710#B	The ICC Instrument Data Base (IDB) shall include at a minimum the following: a. Instrument housekeeping data formats b. Instrument engineering data formats c. Housekeeping and engineering parameter descriptions d. Command descriptions e. Syntactical rules for commands and operator directives f. Operator directives g. Display formats h. Planning and scheduling definitions and constraints i. Analysis algorithms j. Report formats k. Derived telemetry parameter equations l. Parameter limits m. Instrument characteristics n. Command validation parameters	V2.0-ICT-13
ICC-4720#B	The ICC shall maintain the latest two versions of the IDB.	V2.0-ICT-13
ICC-4730#A	The ICC shall have the capability to modify records in the IDB.	V1-ICT-13
ICC-4730#B	The ICC shall have the capability to modify records in the IDB.	V2.0-ICT-13
ICC-4740#A	The ICC shall provide syntax and structure checking of the IDB.	V1-ICT-13
ICC-4740#B	The ICC shall provide syntax and structure checking of the IDB.	V2.0-ICT-13
ICC-4760#A	The ICC shall generate a report identifying any problems with the contents of the IDB.	V1-ICT-13
ICC-4760#B	The ICC shall generate a report identifying any	V2.0-ICT-13

	problems with the contents of the IDB.	
ICC-4775#A	The ICC shall provide the EOC with the instrument-specific portion of the PDB and/or updates thereto.	V1-ICT-13
ICC-4775#B	The ICC shall provide the EOC with the instrument-specific portion of the PDB and/or updates thereto.	V2.0-ICT-13
ICC-4780#A	The ICC shall maintain a history log of instrument and ICC activities for at least 7 days, including at a minimum the following: a. All messages sent and received b. Engineering and housekeeping data c. Operator requests/directives and responses d. Commands e. Microprocessor loads and dumps f. Limits violations g. Error conditions h. Instrument status data i. Executed schedules j. Analysis results k. Instrument calibration parameters l. Spacecraft status information m. ICC reconfiguration information	V1-ICT-13
ICC-4780#B	The ICC shall maintain a history log of instrument and ICC activities for at least 7 days, including at a minimum the following: a. All messages sent and received b. Engineering and housekeeping data c. Operator requests/directives and responses d. Commands e. Microprocessor loads and dumps f. Limits violations g. Error conditions h. Instrument status data i. Executed schedules j. Analysis results k. Instrument calibration parameters l. Spacecraft status information m. ICC reconfiguration information	V2.0-ICT-13
ICC-4790#A	The ICC shall be capable of extracting data sets	V1-ICT-13

	from the history log by specifying time and data type.	
ICC-4790#B	The ICC shall be capable of extracting data sets from the history log by specifying time and data type.	V2.0-ICT-13
ICC-6005#A	The ICC shall have the capability to schedule its systems and communications interfaces that are used for its instrument operations and for other activities including maintenance, upgrade, sustaining engineering, testing, and training.	V1-ICT-13
ICC-6005#B	The ICC shall have the capability to schedule its systems and communications interfaces that are used for its instrument operations and for other activities including maintenance, upgrade, sustaining engineering, testing, and training.	V2.0-ICT-13
ICC-6010#B	The ICC shall participate in the scheduling of interface and end-to-end tests with the external elements involved including the EOC, the SMC for other EOS elements, and EDOS for MO&DSD data delivery systems.	V2.0-ICT-13

ICC-6020#A

ICC-6040#B	The ICC shall support reconfiguration to work around ICC faults and anomalies without interrupting other ongoing operations.	V2.0-ICT-13
ICC-6060#B	The ICC shall allow operator override for ICC reconfiguration requests that violate operational constraints.	V2.0-ICT-13
ICC-6070#A	The ICC shall manage initialization and shutdown of ICC functions.	V1-ICT-13
ICC-6070#B	The ICC shall manage initialization and shutdown of ICC functions.	V2.0-ICT-13
ICC-6090#B	The ICC shall alert the operator when its status changes or when data errors exceed operator-specified levels.	V2.0-ICT-13
ICC-6110#B	The ICC shall manage its faults, including at a minimum the following: a. Fault identification b. Identification of recommended solutions c. Log of fault activities through resolution	V2.0-ICT-13
ICC-6130#B	The ICC shall be capable of initiating diagnostics to aid in isolating internal faults, using safeguards to prevent their operations from affecting other operations.	V2.0-ICT-13
ICC-6135#B	The ICC shall participate in the resolution of failures and anomalies involving the interfaces of the ICC.	V2.0-ICT-13
ICC-6140#B	The ICC shall provide tests for validating, verifying, and checking functional capabilities and performance for ICC functions after the ICC has been repaired or upgraded.	V2.0-ICT-13
ICC-6150#B	The ICC shall provide the capability to support the instrument integration test activities associated with the instrument testing, spacecraft and instrument integration testing, and launch site testing.	V2.0-ICT-13
ICC-6510#A		V1-ICT-13

	The ICC shall provide the capability for the operator to control the ICC functions and components, utilizing a combination of input devices.	
ICC-6510#B	The ICC shall provide the capability for the operator to control the ICC functions and components, utilizing a combination of input devices.	V2.0-ICT-13
ICC-6520#A	The ICC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each ICC function.	V1-ICT-13
ICC-6520#B	The ICC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each ICC function.	V2.0-ICT-13
ICC-6525#A	The ICC shall provide the capability to notify the operator of events and alarms.	V1-ICT-13
ICC-6525#B	The ICC shall provide the capability to notify the operator of events and alarms.	V2.0-ICT-13
ICC-6540#A	The ICC shall support the use of a high-level interactive control language, which consists of a set of directives and programming-like language capabilities, including at a minimum the following: a. Evaluate algebraic and logical expressions b. Exercise decision logic (IF statements) c. Automated execution of a set of multiple directives (i.e., user interface language procedure) d. Internally branch to other parts of the user interface language procedure e. Nest user interface language procedures within procedures f. Initiate other ICC applications	V1-ICT-13
ICC-6540#B	The ICC shall support the use of a high-level interactive control language, which consists of a set of directives and programming-like language	V2.0-ICT-13

	capabilities, including at a minimum the following: a. Evaluate algebraic and logical expressions b. Exercise decision logic (IF statements) c. Automated execution of a set of multiple directives (i.e., user interface language procedure) d. Internally branch to other parts of the user interface language procedure e. Nest user interface language procedures within procedures f. Initiate other ICC applications	
ICC-6580#A	The ICC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V1-ICT-13
ICC-6580#B	The ICC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V2.0-ICT-13
ICC-6600#A	The ICC shall respond to user inputs within 0.5 seconds.	V1-ICT-13
ICC-6600#B	The ICC shall respond to user inputs within 0.5 seconds.	V2.0-ICT-13
ICC-7060#A	The IST shall have the capability to accept data from the Science Computing Facility (SCF), which include at a minimum the following data: a. Microprocessor memory loads	V1-ICT-13

	The ICC shall be capable of supporting the following simultaneous activities: a. Performing mission coordination, planning, scheduling, monitoring, and commanding of its instruments. b. At least two of the following: mission test activities, ICC system upgrades, training, and/or maintenance.	
ICC-8020#B	The ICC computer hardware shall be able to grow without redesign to twice the processing, storage, and communications capacities estimated for full system operation.	V2.0-ICT-13
ICC-8050#B	The GSFC ICC architecture shall be capable of growing to support additional instruments without major redesign	V2.0-ICT-13
ICD-0010	Accept a Data Availability Notice from TSDIS and return a Data Availability Acknowledgment.	V1-TST-01 V1-TST-03
ICD-0020	On receipt of data by TSDIS, accept a Data Delivery Notice and return a Data Delivery Acknowledgment.	V1-TST-03
ICD-0030	Accept a request for data specified by TSDIS FILE_ID, and return aData Request Acknowledgment.	V1-TST-01 V1-TST-03
ICD-0040	Accept a request for data specified by time range, and return a Data Request Acknowledgment.	V1-TST-03
ICD-0080	Maximum message length of a DAN is 1 MB (1,048,576 B).	V1-TST-01 V1-TST-03
ICD-0090	Initiate and terminate sessions via gateway control messages: Start Session Close Session Start Session Acknowledgment Gateway Error Message	V1-TST-01 V1-TST-03
ICD-0100	Data staged for TSDIS will be available for at least 48 hours.	V1-TST-03
ICD-0110	The DAAC must host the Kerberos Security Server for TSDIS-DAAC communications.	V1-TST-01
ICD-0150	Restrict data access to TRMM Science Users for the first 6 months after mission instrument checkout.	V1-TST-01 V1-TST-03
ICD-0170	On receipt and staging of subscribed-to ancillary data, send a DAN to TSDIS.	V1-TST-01 V1-TST-03
ICD-0180	On staging of data in response to TSDIS requests, send a DAN to TSDIS and accept a DAA in return.	V1-TST-01 V1-TST-03

ICD-0200	On staging of data in response to TSU requests through TSDIS, send an notification to the TSU by email.	V1-TST-01 V1-TST-03
ICD-0210	On failed ingest/archive of any files referenced in a TSDIS DAN, send a long-form Data Delivery Notice with information about the failure and accept a Data Delivery Acknowledgment.	V1-TST-01 V1-TST-03
ICD-0220	On successful ingest/archive of all files referenced in a TSDIS DAN, send a short-form Data Delivery Notice and accept a Data Delivery Acknowledgment.	V1-TST-01 V1-TST-03
ICD-0230	Stage metadata in ASCII ODL files for TSUs along with the data if the metadata was updated since archive.	V1-TST-03
ICD-0250	Support FTP retrieval of ordered data by TRMM Science Users.	V1-TST-01 V1-TST-03
ICD-0260	Update quality indicator and comment for a granule identified by the TSDIS FILE_ID.	V1-TST-03
ICD-0270	Use EBNet to communicate with TSDIS	V1-TST-01 V1-TST-03
ICD-0290	Use IP (Internet Protocol) to communicate with TSDIS	V1-TST-01 V1-TST-03
ICD-0320	Use Transmission Control Protocol for reliable delivery from/to TSDIS.	V1-TST-01 V1-TST-03
IMS-0040#B	The IMS shall verify user authorization by validation of inputs with information as supplied by the SMC.	V2.0-SFQ-03
IMS-0060#B	The IMS shall, when creating ECS user accounts, request registration approval, user account priorities, and authorized user services from the SMC.	V2.0-EGS-07
IMS-0100	The IMS shall support, at a minimum: a. Interactive sessions b. Non- interactive remote sessions c. Client-server interface d. Simulated sessions for training purposes	V2.0-SFQ-03
IMS-0130#B	The IMS shall verify that a user is authorized to access a particular IMS service before providing the service to the user.	V2.0-SFQ-03
IMS-0160	The IMS shall provide levels of user interaction support to include at a minimum: a. Expert (e.g., quick command driven direct information input) b. Intermediate (e.g., some	V2.0-SFQ-03

	prompting and automatically supplied help) c. Novice (e.g., extensive prompting and help facilities)	
IMS-0210#B	The IMS shall allow data access privileges to be configurable by user and data type for: a. Read b. Write c. Update d. Delete e. Any combination of the above	V2.0-SFQ-03
IMS-0230#B	The IMS shall restrict update of ECS directory, inventory, and guide (documentation/reference material) and other IMS data bases to authorized users based on the users access privileges.	V2.0-EGS-07 V2.0-SFQ-03
IMS-0240	The IMS shall provide, at a minimum, data base administration utilities for: a. Modifying the data base schema b. Performance monitoring c. Performance tuning d. Administration of user access control e. On-line incremental backup f. On-line recovery g. Export/import of data	V1-TST-03
IMS-0240#B	The IMS shall provide, at a minimum, data base administration utilities for: a. Modifying the data base schema b. Performance monitoring c. Performance tuning d. Administration of user access control e. On-line incremental backup f. On-line recovery g. Export/import of data	V2.0-SFQ-01
IMS-0260	The IMS shall provide interactive and batch information management capabilities for authorized users to add, update, delete, and retrieve information from the IMS data bases.	V1-TST-01 V1-TST-03
IMS-0320#B	Standard Product related metadata shall contain, at a minimum: a. Keywords and glossary from investigators b. Keywords, synonyms, and glossary for cross-product and cross-directory referencing	V2.0-SFQ-06

	c. Identifiers for locating products in the DADS archive by granule d. Documentation on algorithms, including version history, authors, written description of product, equations, and references e. Documentation on instrument(s) and spacecraft(s) including history of housekeeping and ancillary parameters, discipline characterization, calibration parameters, key individuals, and references f. Identifiers, algorithms, written descriptions, equations, authors, and references associated with static browse products and subsetted, subsampled, and summary data products g. Published papers, research results, significant results, and references by author and date h. Key organizations and personnel for all product-related DAACs, ADCs, and ODCs i. Granule-specific information as listed in Tables C-10 and C-11 in Appendix C	
IMS-0350	The IMS shall provide the capability for authorized personnel to add, delete, or modify ECS metadata entries, individually or in groups.	V1-TST-03
IMS-0350#B	The IMS shall provide the capability for authorized personnel to add, delete, or modify ECS metadata entries, individually or in groups.	V2.0-SFQ-02
IMS-0380#B	The IMS shall provide the capability to exchange directory data with IP data centers, ADCs, and selected ODCs.	V2.0-ICT-04
IMS-0420#B	The IMS on-line guide (documentation /reference material) shall provide or, where appropriate, contain references to such information as: a. Documentation of processing algorithms used for EOS and other Earth science data products generated by the ECS b. Results of science data quality assessments of EOS data c. Bibliography of published and unpublished literature (as available) derived from the project	V2.0-SFQ-06

	d. Cross references between differing studies of the same data e. Other documents relevant to quality assessment of EOS data f. Product specifications g. Instrument specifications h. Summaries of data sets derived from observation logs i. Format options available for the given data set j. Subsetting, subsampling, and transformation options available for the given data set k. Inventory search options available for the given data set	
IMS-0450	The IMS shall accept and validate new and updated metadata for all ECS archive data which has been ingested at the DADS.	V1-TST-03
IMS-0510#B	The IMS shall provide tools for research planning and data search, to include at a minimum: a. Data acquisition schedules and plans b. The capability to map specified geophysical parameters to the appropriate instrument and/or Standard Product c. Descriptive information on instruments and geophysical parameters available in Standard Products d. Climatology information e. Phenomenology information f. Geographic reference aids g. Spacecraft location projections.	V2.0-SFQ-03
IMS-0575#B	The IMS shall provide the capability to search across multiple data sets for coincident occurrences of data in space and/or time and any other attribute(s) of metadata.	V2.0-SFQ-06
IMS-0580#B	The IMS shall provide geographic and geophysical (e.g. ocean bathymetry surface features) overlays to aid in the selection of spatial data and to enhance the display of metadata.	V2.0-SFQ-06
IMS-0600#B	The IMS shall provide the capability to search a directory of information that	V2.0-ICT-04

	describes whole EOSDIS, non-EOSDIS, and ADC earth science data sets.	
IMS-0620#B	The IMS shall provide access to inventories of selected ODCs and ADCs via level II and level III catalog interoperability as specified in ICDs.	V2.0-ICT-04
IMS-0625#B	The IMS shall provide bi-directional interoperability between ECS and V0 for access to the inventory metadata, guide information, and browse products via level III catalog interoperability as specified in ICDs.	V2.0-SFQ-05
IMS-0680#B	The IMS shall provide data order capabilities integrated with metadata search capabilities.	V2.0-SFQ-06
IMS-0690#B	The IMS shall provide the capability to visualize pre-order data products and metadata (e.g. coverage maps, summary data) to facilitate the data selection and ordering process.	V2.0-SFQ-06
IMS-0700#B	The IMS shall provide the capability for users to request subsetted, subsampled, and summary data products, which have been processed at the PGS during the routine production processing and archived at the DADS, whenever associated inventory information is displayed.	V2.0-SFQ-06
IMS-0705#B	The IMS shall provide the capability to request a subset (ie. scene) of a Landsat 7 subinterval identified by: a. WRS b. Geographic location (x,,z) spatial with rectangular boundries c. Spectral Band d. Time	V2.0-SFQ-06
IMS-0720#B	The IMS shall provide the capability to request data products which are processed ad hoc in response to user requests for subsetting, subsampling, or averaging within a granule based	V2.0-SFQ-06

	on defined criteria to include: a. Geographical location (x, y, z - spatial with rectangular boundaries) b. Spectral band c. Time d. WRS	
IMS-0730#B	The IMS shall, using information supplied by the DADS, provide the user an estimate of how long it will take before subsetted, subsampled, and summary data products are ready for visualization.	V2.0-SFQ-06
IMS-0770#B	The IMS shall allow users to formulate a data order based on any combination of the inventory core metadata attributes and geophysical parameters at a minimum.	V2.0-SFQ-06
IMS-0780#B	The IMS shall accept and validate from the ECS users, IPs, ADCs, and ODCs requests for ECS archival data products.	V2.0-ICT-04
IMS-0860#B	The IMS shall provide an interface to ADC and ODC data systems and archives that produce, process, and/or maintain Earth science data sets and that have agreed to make the information and services available to ECS.	V2.0-ICT-04
IMS-0870#B	The IMS shall provide access in accordance with MOUs to ADC and ODC data that a. Has been generated by ADC and ODC data systems b. Is stored by ADC and ODC archives and requested by EOSDIS users c. Is required as ancillary data for production processing	V2.0-ICT-04
IMS-0880#B	The IMS shall provide an interface to the ADC and ODC archives for ordering data to be delivered directly to the user or to a DADS.	V2.0-ICT-04
IMS-0915#B	The IMS shall provide an interface to the Version 0 system for ordering data products to be delivered directly to the user, or as specified in ICDs.	V2.0-SFQ-05

IMS-0920#B	The IMS shall provide the capability for users to construct and submit standing orders and one-time requests for processing of ECS data by pre-existing processes, which shall contain the following information at a minimum: a. Requester identification b. Algorithm input requirements c. Text description of need for processing d. Level 0-4 data set/subset e. Required time of generation f. Requested priority for product processing g. Resulting product type h. Processing parameters	V2.0-SFQ-06
IMS-1080#B	The IMS shall accept requests for acquisition of data to be processed one time or as standing orders.	V2.0-SFQ-03
IMS-1290#B	The IMS shall send a product order to an ADC or an ODC with the identification of the destination DADS and suggested shipping deadline for data required for product processing.	V2.0-ICT-04
IMS-1310#B	The IMS shall provide the capability to accept, from product requesters, product distribution status requests, retrieve the request status, and display the status to the requester for an ECS, ADC, or ODC data product.	V2.0-ICT-04
IMS-1350#B	The IMS shall provide the capability for users to preview billing costs, which are based upon MOUs with the ADC and non-EOSDIS data centers, prior to ADC and non-EOSDIS data product order submission.	V2.0-ICT-04
IMS-1490#B	The IMS toolkit software shall provide users, including those working from ICCs and ISTs, with the capability to locally construct the requests for IMS services, forward the requests to the IMS server, and obtain request results.	V2.0-SFQ-06
IMS-1500#B		V2.0-SFQ-06

	The IMS toolkit software shall provide the tools to support user preparation or automated generation of metadata, for example, directory, inventory, and guide (documentation/reference material) entries.	
IMS-1510#B	The IMS data visualization toolkit capabilities shall be portable and execute on ECS supported workstations and appropriate ECS facility computers.	V2.0-SFQ-06
IMS-1520#B	The IMS toolkit software shall provide data visualization tools to assist the investigators to perform the following functions, at a minimum: a. QA/Validation of products generated by the PGS b. Algorithm development c. Calibration functions, parameter verification, and anomaly detection d. View subsetted, subsampled, and summarized data whenever associated inventory information is displayed	V2.0-SFQ-06
IMS-1530#B	The IMS data visualization toolkit shall provide the capability to visualize data in raster and vector formats and to visualize animated products.	V2.0-SFQ-06
IMS-1540#B	The IMS toolkit software shall provide the capability to generate, at a minimum: a. Two-dimensional plots (x-y plots, scatter plots, profiles, histograms) b. Three-dimensional plots c. Contour plots d. Three-dimensional surface diagrams	V2.0-SFQ-06
IMS-1550#B	The IMS toolkit data visualization tools shall provide capabilities for image manipulation (e.g., pan, zoom, color, contrast).	V2.0-SFQ-06
IMS-1570#B	The IMS toolkit software shall provide statistical analysis capabilities.	V2.0-SFQ-06
IMS-1590#B	The IMS toolkit data visualization tools shall provide capabilities for sizing and positioning the	V2.0-SFQ-06

	cursor by: a. Earth coordinates b. Image coordinates c. Instrument scan-line coordinated	
IMS-1650#B	IMS operations data shall contain information on: a. System utilization at the IMS b. Outstanding data distribution requests c. Outstanding processing requests d. Outstanding data acquisition requests	V2.0-SFQ-03
IMS-1700#B	The IMS shall provide the capability to generate reports on: a. The backlog of data distribution requests b. The backlog of processing requests c. The backlog of data acquisition requests d. Data quality assessment e. Daily IMS operations summaries f. IMS performance summaries	V2.0-SFQ-03
IMS-1790#B	The IMS shall provide, based upon the data model defined in Appendix C, sufficient storage for, at a minimum: a. Directory metadata b. Guide (documentation/reference material) metadata c. Inventory metadata d. System space, LSM data, and data base system overhead e. Metadata staging area f. Spacecraft housekeeping and ancillary data metadata g. Science processing library software metadata h. Summary data statistics i. User workspace	V2.0-SFQ-01
LAND-0015#B	The MOC shall have the capability to interface with ECS as a user to acquire Landsat 7 metadata via a standing order.	V2.0-EGS-05 V2.0-ICT-08
LAND-0020#B	The ECS shall have the capability to provide access to the Landsat 7 directory in the GCMD.	V2.0-EGS-05 V2.0-ICT-08
LAND-0030#B	The LPS shall have the capability to send and the ECS shall have the	V2.0-ICT-08

	capability to receive data availability notices for Landsat 7 Level 0R data, and associated inventory metadata and browse data.	
LAND-0040#B	The ECS shall have the capability to provide access to the Landsat 7 guide information.	V2.0-ICT-08
LAND-0050#B	The LPS shall have the capability to send and the ECS shall have the capability to receive inventory metadata for Landsat 7 Level 0R data.	V2.0-EGS-05 V2.0-ICT-08
LAND-0060#B	The LPS shall have the capability to send and the ECS shall have the capability to receive browse data for Landsat 7 Level 0R data.	V2.0-EGS-05 V2.0-ICT-08
LAND-0070#B	The LPS shall have the capability to send and the ECS shall have the capability to receive Landsat 7 Level 0R data.	V2.0-EGS-05 V2.0-ICT-08
LAND-0080#B	The ECS shall have the capability to send and the LPS shall have the capability to receive a data transfer acknowledgement.	V2.0-ICT-08
LAND-0085#B	The ECS shall have the capability to send and the LPS shall have the capability to receive an acknowledgment after ECS archives the Landsat 7 data.	V2.0-EGS-05 V2.0-ICT-08
LAND-0090#B	The IGSs shall have the capability to send and the ECS shall have the capability to receive inventory metadata for Landsat 7 IGS data.	V2.0-EGS-05 V2.0-ICT-08
LAND-0100#B	The IGSs shall have the capability to send and the ECS shall have the capability to receive browse data for Landsat 7 IGS data.	V2.0-EGS-05 V2.0-ICT-08
LAND-0110#B	The IAS shall have the capability to send and the	V2.0-EGS-05 V2.0-ICT-08

	ECS shall have the capability to receive Landsat 7 instrument (ETM+) calibration information and associated metadata.	
LAND-0115#B	The IAS shall have the capability to interface with ECS as a user to acquire Landsat Level OR data.	V2.0-EGS-05 V2.0-ICT-08
LAND-0120#B	The ECS shall have the capability to send and the MMO shall have the capability to receive system management status.	V2.0-EGS-05 V2.0-ICT-08
LAND-0125#B	The ECS shall have the capability to send and the MMO shall have the capability to receive statistics (TBD) and reports (TBD).	V2.0-EGS-05 V2.0-ICT-08
LAND-0130#B	The MMO shall have the capability to send and the ECS shall have the capability to receive system management status.	V2.0-EGS-05 V2.0-ICT-08
LAND-0140#B	The MMO shall have the capability to send and the ECS shall have the capability to receive product cost information.	V2.0-EGS-05 V2.0-ICT-08
LAND-0150#B	All information exchanged between the Landsat 7 System and the ECS shall be provided in mutually agreed to formats.	V2.0-EGS-05 V2.0-ICT-08
LAND-0160#B	All information provided to the ECS by the IGSs shall be provided in mutually agreed to formats.	V2.0-EGS-05 V2.0-ICT-08
LAND-0170#B	ECS elements shall be capable of supporting end-to-end test and verification activities of the EOS program including pre-launch, satellite verification, and instrument verification and operational phases as they pertain to the Landsat 7/ECS interface.	V2.0-EGS-05 V2.0-ICT-08
LAND-0180#B	ECS shall be capable of ingesting, storing and distributing data from LPS to support Landsat 7 for: a. Pre-launch checkout of instruments b. Development of initial calibration information.	V2.0-EGS-05

LAND-0185#B	The ECS shall be capable of supporting interface testing, operations testing and acceptance testing with the LPS, IAS and MOC.	V2.0-EGS-05 V2.0-ICT-08
LAND-0201#B	The ECS shall be capable of ingesting and archiving and acknowledging Landsat 7 Level OR data produced by LPS over 12 hours, within 8 hours from the time of receipt of the data availability notice from LPS.	V2.0-EGS-05 V2.0-ICT-08
LAND-0210#B	The ECS shall begin normal distribution of Landsat 7 products, within 24 hours from the time of receipt of the product order.	V2.0-EGS-05 V2.0-ICT-08
LAND-0220#B	The Landsat 7 LPS shall provide the FDDI connector(s) and cable for connection to the ECS router and FDDI interface at EDC, required to transmit and receive Landsat 7 data to and from ECS.	V2.0-ICT-08
LAND-0230#B	The ECS shall be capable of interfacing with the MMO and MOC via the Internet.	V2.0-ICT-08
LAND-0240#B	The interfaces and any systems connecting to the ECS through these interfaces shall be consistent and compatible with ESDIS implementation of all security requirements imposed on the ECS and with all security documents applicable to ECS.	V2.0-EGS-05 V2.0-ICT-08
LATIS0010	Send NCEP T62 Spectral Coefficients (Sigma Product) data in GRIB format daily to the LaRC DAAC.	V1-TST-01
LATIS0020	Send NCEP Surface Flux data in GRIB format daily to the LaRC DAAC.	V1-TST-01
LATIS0040	Send archivable TOMS (ADEOS) data daily to the LaRC DAAC.	V1-TST-01
LATIS0050	Send archivable TOMS (EP) data daily to the LaRC DAAC.	V1-TST-01
LATIS0060	Send VIRS 1B data on receipt to the LaRC DAAC.	V1-TST-01
NI-0210#B	ECS shall have the capability to communicate with the GN, DSN, and WOTS via the EDOS/EBnet interface.	V2.0-EGS-02
NI-0220#B		V2.0-EGS-02

	ECS shall have the capability to communicate with the GN, DSN, and WOTS for transmitting commands to EOS spacecraft (via the EDOS/EBnet interface). Mission-specific requirements for supporting EOS spacecraft command operations will be documented in the EOS mission-level Detailed Mission Requirements documents.	
NI-0230#B	ECS shall have the capability to interface with the GN, DSN, and WOTS for obtaining return link (telemetry) data from EOS spacecraft (via the EDOS/Ecom interface). Mission-specific requirements for supporting EOS spacecraft telemetry operations will be documented in the EOS mission-level Detailed Mission Requirements documents.	V2.0-EGS-02
NOAA0010#B	The interface between ECS and the SAAs shall support one-way level 2 or 3 catalog interoperability as defined by the CEOS such that an ECS user can access the SAA.	V2.0-ICT-04
NOAA0020#B	The ECS shall maintain a controlled list of the mutually-agreed data sets required from the NOAA ADC to support ECS standard product generation.	V2.0-ICT-04
NOAA0030#B	The interface providing catalog interoperability between the ECS and the SAA shall support the V0 protocol.	V2.0-ICT-04
NOAA0100#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive advertising information.	V2.0-ICT-04
NOAA0110	The ECS shall have the capability to send and the SAAs shall have the capability to receive advertising information.	V2.0-ICT-04
NOAA0140#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive User Authentication Results.	V2.0-ICT-04
NOAA0150	The ECS shall have the capability to send and the SAAs shall have the capability to receive User Authentication	V2.0-ICT-04

	Information.	
NOAA0200	The SAAs shall have the capability to send and the ECS shall have the capability to receive Guide Queries.	V2.0-ICT-04
NOAA0210#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Guide Queries.	V2.0-ICT-04
NOAA0220#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Guide Query Results.	V2.0-ICT-04
NOAA0240	The SAAs shall have the capability to send and the ECS shall have the capability to receive Inventory Queries.	V2.0-ICT-04
NOAA0250#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Inventory Queries.	V2.0-ICT-04
NOAA0260#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Inventory Query Results.	V2.0-ICT-04
NOAA0270	The ECS shall have the capability to send and the SAAs shall have the capability to receive Inventory Query Results.	V2.0-ICT-04
NOAA0280	The SAAs shall have the capability to send and the ECS shall have the capability to receive Browse Requests.	V2.0-ICT-04
NOAA0290#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Browse Requests.	V2.0-ICT-04
NOAA0300#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Browse Results.	V2.0-ICT-04
NOAA0310	The ECS shall have the capability to send and the SAAs shall have the capability to receive Browse Results.	V2.0-ICT-04
NOAA0320	The SAAs shall have the capability to send and the ECS shall have the capability to receive Cost Estimate Requests.	V2.0-ICT-04
NOAA0330#B	The ECS shall have the capability to send and the	V2.0-ICT-04

	SAAs shall have the capability to receive Cost Estimate Requests.	
NOAA0340#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Cost Estimates.	V2.0-ICT-04
NOAA0350	The ECS shall have the capability to send and the SAAs shall have the capability to receive Cost Estimates.	V2.0-ICT-04
NOAA0400	The SAAs shall have the capability to send and the ECS shall have the capability to receive Product Requests.	V2.0-ICT-04
NOAA0410#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Product Requests.	V2.0-ICT-04
NOAA0420	The SAAs shall have the capability to send and the ECS shall have the capability to receive Product Delivery Status Requests.	V2.0-ICT-04
NOAA0430#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Product Delivery Status Requests.	V2.0-ICT-04
NOAA0440#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Product Delivery Status.	V2.0-ICT-04
NOAA0450	The ECS shall have the capability to send and the SAAs shall have the capability to receive Product Delivery Status.	V2.0-ICT-04
NOAA0510#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive data sets to be used as ancillary data for ECS standard product generation.	V2.0-ICT-04
NOAA0560#B	The SAAs and the ECS shall have the capability to perform Schedule Adjudication via telephone.	V2.0-ICT-04
NOAA0600#B	The ECS shall have the capability to receive Network Management information from EBnet.	V2.0-ICT-04
NOAA0710#B	The NCEP shall have the capability to send via the GSFC DAAC and the ECS shall have the capability to receive via the GSFC DAAC data	V2.0-ICT-04 V2.0-ICT-05

	sets to be used as ancillary data for ECS standard product generation.	
NOAA0800#B	The NOAA Data Centers shall have the capability to send and the ECS shall have the capability to receive advertising information.	V2.0-ICT-04
SAGEM0010	SAGE III Mission Operations Center shall have the capability to provide and ECS at the LaRC DAAC shall have the capability to receive notification of data availability using an agreed protocol.	V2.0-ICT-15
SAGEM0010# B	SAGE III Mission Operations Center shall have the capability to provide and ECS at the LaRC DAAC shall have the capability to receive notification of data availability using an agreed protocol.	V2.0-ICT-15
SAGEM0020	ECS at the LaRC DAAC shall have the capability to provide and SAGE III Mission Operations Center shall have the capability to receive acknowledgements of receipt of file transfers using an agreed protocol.	V2.0-ICT-15
SAGEM0020# B	ECS at the LaRC DAAC shall have the capability to provide and SAGE III Mission Operations Center shall have the capability to receive acknowledgements of receipt of file transfers using an agreed protocol.	V2.0-ICT-15
SAGEM0030	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive SAGE III metadata with an agreed upon format and content using an agreed file transfer protocol.	V2.0-ICT-15
SAGEM0030# B	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive SAGE III metadata with an agreed upon format and content using an agreed file transfer protocol.	V2.0-ICT-15
SAGEM0040	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive SAGE III Level 0 data as defined by CCSDS/EDOS format using an agreed file transfer protocol.	V2.0-ICT-15
SAGEM0040# B	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive SAGE	V2.0-ICT-15

	III Level 0 data as defined by CCSDS/EDOS format using an agreed file transfer protocol.	
SAGEM0050	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive definitive orbit data using an agreed file transfer protocol.	V2.0-ICT-15
SAGEM0050# B	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive definitive orbit data using an agreed file transfer protocol.	V2.0-ICT-15
SAGEM0060	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive Level 0 ancillary data using an agreed file transfer protocol.	V2.0-ICT-15
SAGEM0060# B	SAGE III Mission Operations Center shall have the capability to send and ECS at the LaRC DAAC shall have the capability to receive Level 0 ancillary data using an agreed file transfer protocol.	V2.0-ICT-15

B	to interface with SAGE III Mission Operations Center using an agreed upon authorization and authentication protocol.	
SAGEM2010	The ECS within the LaRC DAAC shall have the capacity to support the data volumes as defined in Appendix A of this document.	V2.0-ICT-15
SAGEM2010#B	The ECS within the LaRC DAAC shall have the capacity to support the data volumes as defined in Appendix A of this document.	V2.0-ICT-15
SCF-0060#B	The ECS shall have the capability to provide to the SCF the Toolkit Delivery and Update Package. This package includes the PGS toolkit which supplies tools for the emulation of the ECS production environment and contains a ECS-standardized software routines to aid in science data production software development.	V2.0-ICT-01
SCF-0070#B	The ECS shall have the capability to provide Integration and Test Specifications to the scientist at the SCF. These specifications are defined by the Data Processing Focus Team. These specifications are implemented in the Data Production Software Delivery Package and support smooth integration of the data production software into the ECS production environment.	V2.0-ICT-01
SCF-0080#B	The ECS shall have the capability to provide an Interactive Session Dialog with the SCF. This dialog, to aid integration and test of the data production software into the ECS production environment, shall support, at a minimum, general communications between the ECS and the SCF that include logins, mail messages, status reports, test coordination, test execution scripts, and solutions to minor problems.	V2.0-ICT-01
SCF-0090#B		V2.0-ICT-01

	The SCF shall have the capability to provide ECS with the Data Production Software Delivery Package with "Required Items For Delivery" as specified by the Science User's Guide and Operations Procedure Handbook for the ECS Project.	
SCF-0100#B	The ECS shall have the capability to forward Test Products to the SCF. These products generated by the science software at the ECS will require the review of the scientist at the SCF who submitted the software.	V2.0-ICT-01
SCF-0110#B	The ECS shall have the capability to receive Test Product Reviews from the SCF. These reviews shall include the comments and recommendations of the scientist at the SCF who has reviewed the Test Products.	V2.0-ICT-01
SCF-0120#B	The ECS shall have the capability to receive Data Production Software Updates from the SCF. These Data Production Software Updates include modifications to any data production software already submitted to the ECS by the SCF. The Data Production Software Updates may include some or all the items required in the Data Production Software Delivery Package.	V2.0-ICT-01
SCF-0130#B	The ECS shall have the capability to receive Special Products from the SCF. These shall include L1 - L4 Special Products.	V2.0-ICT-01
SCF-0140#B	The ECS shall have the capability to receive Metadata, related to Special Products, from the SCF.	V2.0-ICT-01
SCF-0150#B	The ECS shall have the capability to receive Ancillary Data, related to	V2.0-ICT-01

	Special Products, from the SCF.	
SCF-0160#B	The ECS shall have the capability to receive Calibration Data, related to Special Products, from the SCF.	V2.0-ICT-01
SCF-0170#B	The ECS shall have the capability to receive Correlative Data, related to Special Products, from the SCF.	V2.0-ICT-01
SCF-0180#B	The ECS shall have the capability to receive Documents from the SCF that are related to Special Products and deemed necessary by the contributing scientist.	V2.0-ICT-01
SCF-0190#B	The ECS shall have the capability to receive Data Production Software, related to Special Products, from the SCF.	V2.0-ICT-01

SCF-0200#B

The ECS shall have the capability to receive from the SCF a QA
Notification Specification. This specification,
submitted by the scientist at

SCF-0230#B		V2.0-ICT-01
	The ECS shall have the capability to send Data Delivered for QA to the SCF. This data includes the data requested by the scientist needed for the QA of data products.	V2.0-SFQ-02
SCF-0240#B		V2.0-ICT-01
	The ECS shall have the capability to receive an On Time QA from the SCF. This shall consist of the science QA codes describing the results of product QA and any further instructions to the ECS. The ECS shall accept the On Time QA when it is received within the time-out period specified in the Data Quality Request Notification. ECS shall accept post-time-out QA updates as Metadata Updates as specified by Requirement SCF-0250.	V2.0-SFQ-02
SCF-0250#B		V2.0-ICT-01
	The ECS shall have the capability to receive Metadata Updates from the SCF. These shall include the science QA codes and optionally a report describing the results of product QA and any further instructions to the ECS. The ECS shall only accept Metadata Updates when they are received after the time allotment specified in the Data Quality Request Notification.	V2.0-SFQ-02
SCF-0260#B		V2.0-ICT-01
	The ECS shall have the capability to make a Reprocessing Request Template available to the SCF. This template will be used by the scientist at the SCF to prepare a Reprocessing Request.	
SCF-0270#B		V2.0-ICT-01
	The ECS shall have the capability to receive a Reprocessing Request from the SCF. This request, at a minimum, contains the following, a list of all the products to be generated, the version numbers of the science software and calibration coefficients, a list of all ancillary	

	data, and data start and stop times.	
SCF-0280#B	The ECS shall have the capability to supply a Reprocessing Status to the SCF. This status that includes the reprocessing schedule informs the scientist at the SCF the status of his reprocessing request and provides notification upon completion of the reprocessing by the ECS.	V2.0-ICT-01
SCF-0290#B	The ECS shall have the capability to send the Local Data Access Services Delivery Package to the SCF. This package shall provide management of, search of, and access to local metadata.	V2.0-ICT-01
SCF-0300#B	The SCF shall have the capability to install and make operational in the SCF environment all COTS products that are required by Local Data Access Services.	V2.0-ICT-01
SCF-0310#B	The ECS shall have the capability to receive Calibration Coefficient Requests from the SCF. The current or past calibration coefficients used in processing of instrument data may be requested by the scientist from the ECS.	V2.0-ICT-01
SCF-0320#B	The ECS shall be capable of sending to the SCF Calibration Coefficients. These shall include the calibration coefficients requested by the scientist at the SCF in the Calibration Coefficient Request.	V2.0-ICT-01
SCF-0330#B	The ECS shall have the capability to receive a Calibration Coefficient Update Package from the SCF. This package shall include a calibration coefficient file and other documentation needed to implement the updated coefficients.	V2.0-ICT-01

SCF-0340#B	The SCF shall have the capability to send a Request for Processing Status to the ECS for the status of SCF-requested data processing.	V2.0-ICT-01
SCF-0350#B	The ECS shall have the capability to provide SCF with the Processing Status of SCF-requested data processing.	V2.0-ICT-01
SCF-0360#B	The SCF shall have the capability to send a Request for Resource Usage to the ECS for information about ECS resource usage during SCF-requested data processing.	V2.0-ICT-01
SCF-0370#B	The ECS shall have the capability to provide SCF with information about ECS Resource Usage during SCF-requested data processing.	V2.0-ICT-01
SCF-0380#B	The SCF shall have the capability to send a Request for Product History (including the algorithms used) to the ECS for the history of data products that the SCF specifies.	V2.0-ICT-01
SCF-0390#B	The ECS shall have the capability to provide SCF with the Product History of data products that the SCF specifies.	V2.0-ICT-01
SDPS0020	The SDPS shall receive EOS science, engineering, ancillary, and expedited data from the EDOS, the SDPF, and the IPs, and non-EOS data, in situ data, associated algorithms, documentation, correlative data, and ancillary data (as listed in Appendix C) from ADCs, EPDSs, and ODCs.	V1-TST-01
SDPS0020#B	The SDPS shall receive EOS science, engineering, ancillary and expedited data from the EDOS and the IPs, and non-EOS data, in situ data, associated algorithms, documentation, correlative data, and ancillary data (as listed in Appendix C) from ADCs, EPDSs, and ODCs.	V2.0-SFQ-01
SDPS0021#B	The SDPS shall convert the following ancillary	V2.0-SFQ-01

	data sets from their native formats into ECS internal formats to allow access by science algorithms: a. NMC final analysis report b. NESDIS Snow/Ice Product c. TOMS products	
SDPS0080	The SDPS shall archive, manage, quality check, and account for all science and ancillary data received from the IPs, the EPDSs, the SCFs, the ADCs, the ODCs, other DAACs, PIs and the other EOS science users.	V1-TST-01 V1-TST-03
SDPS0120	The SDPS shall be capable of operating in a 24-hour a day, 7-day a week mode.	V1-TST-03
SDPS0130	The SDPS shall provide the capability for DAACs to exchange data products, browse data, metadata, data quality information, research results, and documentation.	V1-TST-01
SMC-0340#B	The SMC shall have the capability of responding to system faults within a maximum of five minutes.	V2.0-SFQ-01
SMC-0350#B	The SMC shall have the capability of responding to security compromises within a maximum of five minutes.	V2.0-EGS-07 V2.0-SFQ-04
SMC-1330#B	The SMC shall support and maintain the information for end-to-end data ingest, processing, reprocessing, archive, and data distribution for each product, including, at a minimum: a. Product information b. Product generation information c. Product delivery information	V2.0-SFQ-03
SMC-1345#B	The LSM shall perform priority management services to resolve conflicts for ECS resources.	V2.0-SFQ-02
SMC-2505#B	The LSM shall update the system-wide inventory data base consisting of all hardware, system software, and scientific software contained within its element.	V2.0-SFQ-04
SMC-3305#B	The LSM shall monitor its element's hardware, and scientific and system software status to determine their operational states including, at a minimum :	V2.0-SFQ-04

	a. On-line b. Failed c. In maintenance d. In test mode e. In simulation mode	
SMC-3335#B	The LSM shall compare and evaluate its element's actual schedule performance against planned schedule performance.	V2.0-SFQ-02
SMC-3340#B	The SMC shall perform quality assurance for the overall ECS performance as well as programmatic areas that include, at a minimum: a. System quality testing, benchmarks, and audits for system enhancement implementations b. System quality checking and audits of products processed and delivered c. Quality testing and audits of site and element resource performance.	V2.0-SFQ-02
SMC-3345#B	The LSM shall perform quality assurance for its site/element's performance as well as programmatic areas that includes, at a minimum: a. Quality testing, benchmarks and audits for element enhancement implementations b. Quality checking and audits of products processed and delivered c. Quality testing and audits of element resource performance,	V2.0-SFQ-02
SMC-3350#B	The SMC shall generate, maintain, and update performance criteria and responses to performance deficiencies for system, site, and element resources and activities, such as: a. Data collection b. Product generation, QA and validation c. Reprocessing d. Data delivery to DAACs and to users e. Response to user requests f. Response to TOOs g. Response to field experiments h. Response to emergency situations	V2.0-SFQ-01 V2.0-SFQ-02 V2.0-SFQ-03
SMC-3370#B	For each performance parameter, the SMC shall have the capability of establishing multiple levels of thresholds to include, at a minimum: a. On/off	V2.0-SFQ-04

	b. Pass/fail c. Various levels of degradation	
SMC-3375#B	For each limit checked parameter, the LSM (including those thresholds directed by the SMC) shall have the capability of evaluating multiple levels of thresholds including, at a minimum: a. On/off b. Pass/fail c. Various levels of degradation	V2.0-SFQ-04
SMC-3385#B	The LSM shall evaluate system performance against the ESDIS project established performance criteria.	V2.0-SFQ-02
SMC-3390#B	The SMC shall generate alert indicators of fault or degraded conditions with the corrective actions.	V2.0-SFQ-01
SMC-3395#B	The LSM shall generate, in response to each limit check threshold, alert indicators of fault or degraded conditions with the appropriate corrective actions.	V2.0-SFQ-01
SMC-4315#B	The LSM shall, at a minimum, isolate, locate, and identify faults, identify subsystem, equipment, and software faults, and identify the nature of the faults within its element.	V2.0-SFQ-01
SMC-4335#B	The LSM shall generate fault recovery commands, directives, and instructions within its element.	V2.0-SFQ-01
SMC-5305#B	The LSM shall maintain security policies and procedures, including, at a minimum: a. Physical security b. Password management c. Operational security d. Data classifications e. Access/privileges f. Compromise mitigation	V2.0-EGS-07
SMC-5320#B	The SMC shall establish, maintain, and authenticate access privileges for ECS scientific users.	V2.0-EGS-07
SMC-5325#B	The LSM shall promulgate, maintain, authenticate, and monitor user and device accesses and	V2.0-EGS-07

	privileges.	
SMC-5330#B	The SMC shall provide support, manage, maintain, and request security testing that includes, at a minimum, password checking and control of site and element internal privileges.	V2.0-EGS-07
SMC-5335#B	The LSM shall perform security testing that includes, at a minimum, password auditing and element internal access/privileges checking.	V2.0-EGS-07
SMC-5340#B	The SMC shall perform security risk analyses and compromise detection.	V2.0-EGS-07
SMC-5345#B	The LSM shall perform compromise (e.g., virus or worm penetration) risk analysis, and detection.	V2.0-EGS-07
SMC-5350#B	The SMC shall have the capability to initiate recovery procedures in response to a detected security compromise.	V2.0-EGS-07 V2.0-SFQ-04
SMC-5355#B	The LSM shall isolate the compromised area, detach the compromised input I/O, and the compromised areas output I/O until the compromise has been eliminated.	V2.0-EGS-07 V2.0-SFQ-04
SMC-5365#B	The LSM shall generate recovery actions in response to the detection of compromises.	V2.0-EGS-07 V2.0-SFQ-04
SMC-7300#B	The SMC shall establish, maintain, and update the authorized users inventory to include, at a minimum: a. Users identifications b. Addresses c. Allowed privileges	V2.0-EGS-07
SMC-8880#B	The SMC shall have the capability to generate detailed and summary security compromise reports indicating security compromises of ground resources and facilities, including, at a minimum: a. Security compromise type and description b. Time of occurrence c. Cause of security compromise d. Impact on system e. Status of security compromise resolution	V2.0-EGS-07 V2.0-SFQ-04

	f. Security compromise statistics g. Results of security compromise risk analysis	
TRMM1010	The LaTIS shall ingest CERES Level 0 and quick-look data sets from SDPF.	V1-TST-01
TRMM1030	The SDPF Level 0 and quick-look data sets for CERES shall contain quality and accounting information appended to the end of the data set.	V1-TST-01
TRMM1040	The SDPF Level 0 and quick-look data sets for CERES shall contain a detached SFDU header.	V1-TST-01
TRMM1050	The SDPF shall send a notification to the LaTIS upon availability of CERES Level 0 production or quick-look data.	V1-TST-01
TRMM1060	The LaTIS shall, after notification by SDPF, retrieve CERES Level 0 production and quick-look data by an agreed-upon file transfer protocol.	V1-TST-01
TRMM1070	The LaTIS shall ensure that CERES data has been received and validated.	V1-TST-01
TRMM1080	The LaTIS shall acknowledge successful receipt of a CERES data set to the SDPF.	V1-TST-01
TRMM1090	Upon LaTIS discovering an un-processable data set during validation, the LaTIS and SDPF personnel shall assess the need for regeneration.	V1-TST-01
TRMM1100	The SDPF shall regenerate/reprocess CERES Level 0 data for LaTIS , for recovery purposes, as negotiated in order to avoid impacting SDPF support for on-orbit spacecraft.	V1-TST-01
TRMM1110	The SDPF shall provide a CERES Level 0 data set to LaTIS once per day within 24 hours of the last acquisition session.	V1-TST-01
TRMM1120	The SDPF shall retain CERES Level 0 data sets online for five (5) days.	V1-TST-01
TRMM1130	The LaTIS shall receive CERES scheduled quick-look data sets from SDPF 3 times per day plus occasional special quick-look data sets.	V1-TST-01
TRMM1140	A CERES quick-look data set shall contain data received during a single spacecraft contact.	V1-TST-01
TRMM1150	The SDPF shall notify the LaTIS of availability of a CERES quick-look data set within 2 hours of the end of the acquisition session.	V1-TST-01
TRMM1160	CERES special quick-look data requests shall be scheduled with SDPF by human interaction.	V1-TST-01
TRMM1170	Data collected and processed for CERES solar calibration shall be scheduled by human interaction.	V1-TST-01

TRMM1180	The LaTIS shall be able to process SDPF Level 0 and quick-look data sets in SPDF-defined format.	V1-TST-01
TRMM1190	SDPF shall retain CERES raw data for 2 years.	V1-TST-01
TRMM1195	SDPF shall send a notification to LaTIS upon availability of predictive or definitive orbit data.	V1-TST-01
TRMM1200	The LaTIS shall ingest predicted orbit data from the SDPF.	V1-TST-01
TRMM1210	The LaTIS shall ingest definitive orbit data from the SDPF.	V1-TST-01
TRMM1280	The LaTIS shall be able to accept CERES Mission Simulated data from SDPF.	V1-TST-01
TRMM3050	The TSS shall ingest TRMM Ground Validation (GV) data products and associated metadata from TSDIS.	V1-TST-01 V1-TST-03
TRMM4010	The TSS shall ingest TRMM standard products (Level 1A-3B) for VIRS, PR and TMI, and combined products from TSDIS.	V1-TST-01 V1-TST-03
TRMM4030	The TSS shall ingest TRMM browse products for VIRS, PR, TMI, combined products and GV from TSDIS.	V1-TST-01 V1-TST-03
TRMM4040	The TSS shall ingest from TSDIS algorithms and documentation for VIRS, PR, TMI and combined products.	V1-TST-03
TRMM4050	The VIRS, PR, TMI, combined products and GV data ingested from TSDIS by TSS shall be archived in the TSS systems at the GSFC DAAC.	V1-TST-01 V1-TST-03
TRMM4060	The TSS shall ingest TRMM data files and data products, including metadata, daily.	V1-TST-01 V1-TST-03
TRMM4090	The TSS shall make daily deliveries of an average of 2-days worth of archived TRMM VIRS, PR, TMI, GV, and ancillary data to TSDIS for the purpose of reprocessing by TSDIS. TSS shall also daily ingest an average of 2-days worth of reprocessed data from TSDIS.	V1-TST-01 V1-TST-03
TRMM4100	TSDIS shall make a standing order to TSS for ancillary data to be delivered from the TSS to TSDIS.	V1-TST-01 V1-TST-03
TRMM4101	The TSS shall accept data orders that TSDIS places on behalf of TSDIS Science Users (TSUs) by specifying TSDIS granule specifications.	V1-TST-03
TRMM4103	The TSS shall ingest Level 0 Housekeeping data from TSDIS and provide this data back to TSDIS upon request.	V1-TST-01 V1-TST-03
TRMM4104	The TSS shall ingest FDF definitive/predictive	V1-TST-01

	ephemeris/orbit from TSDIS, and provide this data back to TSDIS on request.	V1-TST-03
TRMM5010	The TSS shall ingest TRMM metadata, and browse from TSDIS along with the TRMM standard products in the EOSDIS format.	V1-TST-01 V1-TST-03
TRMM5040	The TSS shall have the capability to archive and distribute standard TRMM data files and products (including VIRS, PR, TMI, and combined products data, metadata, GV data, algorithms and documentation) as provided and produced by TSDIS and the TRMM Science Team.	V1-TST-01 V1-TST-03
TRMM8071	EOSDIS shall support all data flows and archival and distribution functionality for integration and test with the TRMM ground system.	V1-TST-01
TRMM8100	EOSDIS shall process CERES Level 0 and quick-look data sets received from SDPF for early interface testing.	V1-TST-01
TRMM8120	ESDIS shall coordinate provision of CERES simulated instrument data and instrument parameters to SDPF in support of integration and test.	V1-TST-01
TRMM8130	SDPF shall support the TRMM ground system and EOSDIS integration and test with Level 0 data and quick-look data sets produced from simulated data.	V1-TST-01
TRMM8160	EOSDIS shall provide ancillary data for early interface testing.	V1-TST-01
TRMM8170	During Integration and test and early operation of the TRMM Ground System, EOSDIS shall support controlled distribution of TRMM data.	V1-TST-01
TRMM8180	EOSDIS shall distribute TRMM test products, algorithms and documentation to TST members and authorized users supporting TRMM end-to-end test.	V1-TST-01
TRMMPRO0010	Send email confirmation to TSUs who submit orders through the RST.NOTE: This mitigates the dropping of the POSR/POS dialogue w/TSDIS.	V1-TST-03
V0-0010#B	The ECS shall provide two way interoperability to the EOSDIS V0 system IMS via Level 3 interoperability.	V2.0-SFQ-05
V0-0020#B	EOSDIS V0 IMS shall have the capability to send and ECS shall have the capability to	V2.0-SFQ-05

	receive User Authentication Requests [implementation issue 1].	
V0-0030#B	The ECS shall have the capability to send and EOSDIS V0 IMS shall have the capability to receive ECS User Authentication Information [implementation issue 1].	V2.0-SFQ-05
V0-0040#B	The ECS shall have the capability to send and EOSDIS V0 IMS shall have the capability to receive V0 User Authentication Requests [implementation issue 1].	V2.0-SFQ-05
V0-0050#B	EOSDIS V0 IMS shall have the capability to send and ECS shall have the capability to receive V0 User Authentication Information [implementation issue 1].	V2.0-SFQ-05
V0-0060#B	The ECS shall have the capability to send and EOSDIS V0 IMS shall have the capability to receive Inventory Search Requests via V0 protocols.	V2.0-SFQ-05
V0-0070#B	The EOSDIS V0 IMS shall have the capability to send and ECS shall have the capability to receive Inventory Search Results via V0 protocols.	V2.0-SFQ-05
V0-0080#B	The ECS shall have the capability to send and the EOSDIS V0 IMS shall have the capability to receive Guide Search Requests via V0 protocols.	V2.0-SFQ-05
V0-0090#B	The EOSDIS V0 IMS shall have the capability to send and the ECS shall have the capability to receive Guide Search Results via V0 protocols.	V2.0-SFQ-05
V0-0100#B	The ECS shall have the capability to send and the EOSDIS V0 IMS shall have the capability to receive Browse Requests via V0 protocols.	V2.0-SFQ-05
V0-0110#B	The EOSDIS V0 IMS shall have the capability to send and the ECS shall have the	V2.0-SFQ-05

	capability to receive and Browse Results via V0 protocols.	
V0-0120#B	The ECS shall have the capability to send and EOSDIS V0 IMS shall have the capability to receive Product Requests via V0 protocols.	V2.0-SFQ-05
V0-0150#B	EOSDIS V0 IMS shall have the capability to send and the ECS shall have the capability to receive Inventory Search Requests via V0 protocols.	V2.0-SFQ-05
V0-0160#B	ECS shall have the capability to send and EOSDIS V0 IMS shall have the capability to receive Inventory Search Results via V0 protocols.	V2.0-SFQ-05
V0-0170#B	EOSDIS V0 IMS shall have the capability to send and ECS shall have the capability to receive Guide Search Requests [implementation issue 2].	V2.0-SFQ-05
V0-0180#B	The ECS shall have the capability to send and V0 EOSDIS IMS shall have the capability to receive Guide Search Results [implementation issue 2].	V2.0-SFQ-05
V0-0190#B	V0 EOSDIS IMS shall have the capability to send and ECS shall have the capability to receive Browse Requests [implementation issue 2].	V2.0-SFQ-05
V0-0200#B	The ECS shall have the capability to send and V0 EOSDIS IMS shall have the capability to receive Browse Results [implementation issue 2].	V2.0-SFQ-05
V0-0230#B	The EOSDIS V0 IMS shall have the capability to send and ECS shall have the capability to receive Product Requests via V0 protocols.	V2.0-SFQ-05
V0-0240#B	ECS and Version 0 shall exchange pricing information, as necessary.	V2.0-SFQ-05
V0-0370#B	The DAAC(s) shall have the capability to send and ECS shall have the capability to receive Advertising Information [implementation issue 6].	V2.0-SFQ-05
V0-0380#B	ECS shall have the capability to send and the	V2.0-SFQ-05

	EOSDIS V0 IMS system shall have the capability to receive Dependent Valids Information [implementation issue 6].	

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Appendix B - Summary: EGS I&T Program Changes

The original EGS Version 1 I&T Plan was replaced by a suite of confidence tests and joint tests. Most of the planning effort made during the development of the Version 1 I&T Plan was directly transferable to the Confidence Test Program, as shown in the table below.

The EGS I&T Plan, and this document have been revised to incorporate changes as a result of the: 1) ECS Release A cancellation and replacement with TRMM specific TSS and LaTIS systems, and 2) the ECS SDP Release B replanning and ESDIS/ECS EGS I&T and ECS Acceptance Test (AT) program streamlining activities. Changes are identified in table below.

Summary of EGS I&T Confidence Test Package changes

Confidence Test Package Title	EGS I&T June '96 Version 1 I&T Plan	EGS I&T Dec. '96 Plan Confidence Test Package ID	EGS I&T Current Plan Confidence Test Package ID
Telemetry Processing and Logging Confidence Test	V1-FT02	EOC1	EOC1
Command Processing Confidence Test	V1-FT03	EOC2	EOC2
Planning and Scheduling Confidence Test	V1-FT01	EOC3	EOC3
Telemetry Analysis Confidence Test		EOC4	EOC4
Resource Management Confidence Test		EOC5	EOC5
Data Ingest and Archive Confidence Test		SDP1	**SFQ1 qual test**
Science Data Production Confidence Test		SDP2	**SFQ2 qual test**
Data Access and Transfer Confidence Test		SDP3	**SFQ3 qual test**
System Administration Confidence Test		SDP4	**SFQ4 qual test**
V0 Interoperability Confidence Test	V1-EXT13	SDP5	**SFQ5 qual test**
Data Manipulation Confidence Test		SDP6	**SFQ6 qual test**
ECS SDP - SCF Interface Confidence Test	V1-EXT01	ICT1	ICT1

Confidence Test Package Title	EGS I&T June '96 Version 1 I&T Plan	EGS I&T Dec. '96 Plan Confidence Test Package ID	EGS I&T Current Plan Confidence Test Package ID
EOC-EDOS Interface Confidence Test	V1-EXT02	ICT2	**deleted**
ECS SDP - EDOS Interface Confidence Test	V1-EXT02	ICT3	ICT3
ECS SDP - NOAA ADC Interface Confidence Test	V1-EXT03	ICT4	ICT4
ECS SDP - GDAAC Data Link Server Interface Confidence Test	V1-EXT04	ICT5	ICT5
DAAC - SDPF Interface Confidence Test	V1-EXT05	ICT6	**deleted**
DAAC - TSDIS Interface Confidence Test	V1-EXT06	ICT7	**deleted**
ECS – Landsat 7 Interface Confidence Test	V1-EXT07	ICT8	ICT8
EOC - NCC Interface Confidence Test	V1-EXT08	ICT9	ICT9
EOC - FDS Interface Confidence Test	V1-EXT09	ICT10	ICT10
EDOS - ASTER GDS Interface Confidence Test		ICT11	ICT11
DAAC - ASTER GDS Interface Confidence Test		ICT12	ICT12
EOC - ICC/IST Interface Confidence Test		ICT13	ICT13
EOC - ASTER GDS Interface Confidence Test		ICT14	ICT14
ECS - SAGE III MOC Interface Confidence Test		ICT15	ICT15
AM-1 Spacecraft Operations Confidence Test	New - starts from V1-FT01	EGS1	EGS1
AM-1 Contingency Mode Operations Confidence Test	V1-FT06	EGS2	EGS2
AM-1 Daily Operations Confidence Test	V1-PST01	EGS3	EGS3
EGS - TRMM Interoperability Confidence Test	V1-FT04	EGS4	**deleted**
ECS - Landsat 7 Interoperability Confidence Test	V1-FT05	EGS5	EGS5
ASTER Instrument Operations Test		EGS6	EGS6
Security Confidence Test		EGS7	EGS7

Confidence Test Package Title	EGS I&T June '96 Version 1 I&T Plan	EGS I&T Dec. '96 Plan Confidence Test Package ID	EGS I&T Current Plan Confidence Test Package ID
SAGE III Interoperability Confidence Test		EGS8	EGS8
ASTER Science Operations Confidence Test			EGS9
AM-1 Science Operations Confidence Test			EGS 10
EGS Performance Confidence Test			EGS 11
TSDIS/TSS and SDPF/LaTIS Overall Confidence Test			TST01
TSDIS/TSS Interface, Ingest and Archive Test			TST03

Appendix C - Acronyms and Abbreviations

ADC   Affiliated Data Center
AOS   ASTER Operations Segment
ASTER   Advanced Spaceborne Thermal Emission and Reflection Radiometer

CCSDS   Consultative Committee for Space Data Systems
CMD   Command
CODA   Customer Operations Data Accounting
COTS   Commercial Off-The-Shelf
CPT   Comprehensive Performance Test
CTP   Confidence Test Package

DAA   Data Availability Acknowledgment
DAAC   Distributed Active Archive Center
DAN   Data Availability Notice
DAO   Data Assimilation Office
DAR   Data Acquisition Request
DDA   Data Delivery Acknowledgment
DDF   Data Distribution Facility
DR   Discrepancy Report
DRTT   Discrepancy Report Tracking Tool
DSN   Deep Space Network

EBnet   EOSDIS Backbone Network
EDS   Expedited Data Set
ECS   EOSDIS Core System
EDC   EROS Data Center
EDOS   EOS Data and Operations System
EDU   EDOS Data Units
ECT   EOC Compatibility Test
EGS   EOS Ground System
EOC   EOS Operations Center
EOS   Earth Observing System
EOSDIS   Earth Observing System Data and Information System
ESDIS   Earth Science Data and Information System
ETE   End-to-End
ETS   EOSDIS Test System
EU   Engineering Unit

F&PR   Functional and Performance Requirement
FDF   Flight Dynamics Facility
FOT   Flight Operations Team

GDS	Ground Data System
GN	Ground Network
GPCP	Global Precipitation Climatology Project
GPI	Global Precipitation Index
GSFC	Goddard Space Flight Center
GV	Ground Validation
H/K	Housekeeping
I&T	Integration and Test
ICC	Instrument Control Center (ECS) (ASTER)
ICD	Interface Control Document
ICT	Interface Confidence Test
IMS	Information Management Service
IPT	Integrated Product Team
IST	Instrument Support Terminal
IT	Instrument Team
LaRC	Langley Research Center
LPS	Landsat 7 Processing System
LTIP	Long-Term Instrument Plan
LTSP	Long-Term Science Plan
M&O	Maintenance and Operations
MOM	Mission Operations Managers
MRTT	Mission Readiness Test Team
MTPE	Mission to Planet Earth
NASA	National Aeronautics and Space Administration
NCC	Network Control Center
NCR	Nonconformance Report
NMC	National Meteorological Center
NOAA	National Oceanic Atmospheric Administration
OBC	On Board Computer
P&S	Planning and Scheduling
PDS	Production Data Set
QA	Quality Assurance
RTM	Requirements and Traceability Management
RFSOC	Radio Frequency Simulation Operation Center
S/C	Spacecraft

SCF	Science Computing Facility
SCS	Spacecraft Session
SDPF	Science Data Processing Facility
SDP	Science Data Processing
SIM	Simulation
SOM	Science Operations Manager
SMC	System Monitoring and Coordination Center
SN	Space Network
SSIM	Spacecraft Simulator
SSO	Science Systems and Operations
SSR	Solid State Recorder
SYS-IPT	Systems Integrated Product Team
TBR	To Be Resolved
TBS	To Be Supplied
TCP/IP	Transmission Control Protocol/Internet Protocol
TDM	Test Data Management
TDRSS	Tracking and Data Relay Satellite System
TICTOC	Test Integration & Certification Test Oversight Committee
TLM	Telemetry
TRMM	Tropical Rainfall Measuring Mission
TSDIS	TRMM Science Data and Information System
TSU	TRMM Science User
WOTS	Wallops Orbital Tracking System